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<151> 2002-12-27

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 Ala Val His Leu Asp Thr Thr Pro Ala Ala Pro Ala Asp Val Ala His  
 260 265 270  
 Thr Leu Leu Thr Ala Arg Pro Asp Arg His Arg Ala Ala Val Val Gly  
 275 280 285  
 Ala Asp Arg Ala Thr Leu Thr Asp Gly Leu Arg Ala Leu Ala Thr Gly  
 290 295 300  
 Gly Asp Ala Pro His Leu Val His Gly Thr Ala Thr Gly Ser Pro Arg  
 305 310 315 320  
 Pro Val Phe Val Phe Pro Gly Gln Gly Ser Gln Trp Pro Gly Met Ala  
 325 330 335  
 Ala Glu Leu Leu Glu Thr Ser Glu Pro Phe His Asp Ser Val His Ala  
 340 345 350  
 Cys Ala Asp Ala Leu Ala Glu Phe Val Asp Trp Ser Val Leu Asp Val  
 355 360 365  
 Leu Arg Gln Ala Pro Asp Ala Pro Pro Leu Arg Arg Val Asp Val Leu  
 370 375 380  
 Gln Pro Thr Leu Trp Ala Thr Met Val Ser Leu Ala Glu Val Trp Arg  
 385 390 395 400  
 Ser Tyr Gly Val Glu Pro Ala Ala Val Val Gly His Cys Tyr Gly Glu  
 405 410 415  
 Ile Ala Ala Ala Gln Val Ala Gly Ala Leu Asp Met Arg Asp Ala Ala  
 420 425 430  
 Arg Leu Leu Ala His Arg Ser Arg Ala Trp Leu Arg Leu Val Gly Lys  
 435 440 445  
 Gly Thr Val Ile Ser Val Ala Thr Ser Gly Gln Asp Ile Thr Arg Arg  
 450 455 460  
 Met Ala Ala Trp Pro Asp Ser Val Glu Leu Ala Ala Leu Asn Gly Pro  
 465 470 475 480  
 Arg Ser Val Ala Leu Ala Gly Pro Pro Asp Val Leu Asp Gly Ile Val

42

835

840

845

Val Asp Asp Pro Ala Thr Asp Arg Phe Ala Ala Ala Thr Asp Asp Glu  
 850 855 860

Met Phe Glu Leu Leu Glu Lys Arg Phe Gly Ile Ser  
 865 870 875

&lt;210&gt; 3

&lt;211&gt; 1571

&lt;212&gt; PRT

&lt;213&gt; Streptomyces Parvulus Tü4055

&lt;400&gt; 3

Met Ala His Glu Asp Lys Leu Arg His Leu Leu Lys Arg Val Ser Ala  
 1 5 10 15

Glu Leu Asp Asp Thr Gln Arg Arg Val Arg Glu Met Glu Glu Ser Glu  
 20 25 30

Arg Glu Pro Ile Ala Ile Val Gly Met Ser Cys Arg Leu Pro Gly Gly  
 35 40 45

Val Asn Ser Pro Gly Glu Phe Trp Ser Leu Leu Glu Ala Gly Thr Asp  
 50 55 60

Ala Val Ser Glu Phe Pro Arg Asp Arg Gly Trp Asp Val Glu Asn Leu  
 65 70 75 80

Tyr Asp Pro Asp Pro Asp Ala Pro Gly Arg Ser Tyr Val Arg Glu Gly  
 85 90 95

Gly Phe Leu Asp Gly Ala Gly Gln Phe Asp Ala Ala Phe Phe Gly Ile  
 100 105 110

Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Leu Leu  
 115 120 125

Glu Cys Ser Trp Glu Ala Ile Glu Arg Ser Arg Ile Asp Pro Lys Thr  
 130 135 140

Leu His Gly Ser Arg Thr Gly Val Phe Ala Gly Ser Asn Trp Gln Asp  
 145 150 155 160

Tyr Asn Thr Leu Leu Leu Asn Ala Glu Glu Arg Ser Gln Ser Tyr Leu  
 165 170 175

Ala Thr Gly Ala Ser Gly Ser Val Leu Ser Gly Arg Val Ser Tyr Thr  
 180 185 190

Leu Gly Met Glu Gly Pro Ala Ile Thr Val Asn Thr Ala Cys Ser Ser  
 195 200 205

Ser Leu Val Ala Val His Leu Ala Ala Arg Ser Leu Arg Ala Gly Glu  
 210 215 220

Cys Asp Leu Ala Leu Ala Gly Ala Val Thr Val Met Ser Thr Pro Gln  
 225 230 235 240

Leu Pro Val Ala Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg  
 245 250 255

Ser Lys Ala Phe Ala Val Ser Ala Asp Gly Met Gly Phe Gly Glu Gly  
 260 265 270

Val Gly Val Leu Val Leu Glu Arg Leu Ser Val Ala Arg Arg Asn Gly  
 275 280 285  
 His Arg Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly  
 290 295 300  
 Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val  
 305 310 315 320  
 Ile Arg Ala Ala Leu Ala Ser Ala Gly Leu Gly Pro Ala Asp Val Asp  
 325 330 335  
 Val Val Glu Ala His Gly Thr Gly Thr Arg Leu Gly Asp Pro Ile Glu  
 340 345 350  
 Ala Gln Ala Leu Leu Ala Thr Tyr Gly Arg Gly Arg Asp Ala Glu Arg  
 355 360 365  
 Pro Leu Trp Leu Gly Ser Val Lys Ser Asn Ile Gly His Ala Gln Ala  
 370 375 380  
 Ala Ala Gly Val Ala Gly Val Ile Lys Met Val Leu Ala Met Glu Lys  
 385 390 395 400  
 Gly Arg Leu Pro Arg Thr Leu His Val Asp Glu Pro Ser Gly Glu Val  
 405 410 415  
 Asp Trp Asp Ser Gly Ala Val Arg Leu Leu Thr Glu Ala Arg Asp Trp  
 420 425 430  
 Pro Ser Glu Glu Gly Arg Leu Arg Arg Ala Gly Val Ser Ser Phe Gly  
 435 440 445  
 Ile Ser Gly Thr Asn Ala His Val Ile Ile Glu Glu Ala Pro Glu Glu  
 450 455 460  
 Gly Glu Glu Pro Glu Ser Asp Ala Gly Gly Val Val Pro Trp Val Leu  
 465 470 475 480  
 Ser Ala Arg Thr Glu Gly Ala Leu Gln Ala Gln Ala Val Gln Leu Ser  
 485 490 495  
 Glu Phe Val Gly Glu Ser Ser Pro Val Asp Val Gly Trp Ser Leu Val  
 500 505 510  
 Ser Thr Arg Ala Ala Phe Glu His Arg Ala Val Val Val Gly Arg Gly  
 515 520 525  
 Arg Asp Glu Leu Val Arg Gly Leu Ser Glu Val Ala Gln Gly Arg Gly  
 530 535 540  
 Val Arg Gly Val Ala Ser Ser Ala Ser Gly Gly Leu Ala Phe Val Phe  
 545 550 555 560  
 Ala Gly Gln Gly Ser Gln Arg Leu Gly Met Gly Arg Gly Leu Tyr Glu  
 565 570 575  
 Arg Phe Pro Val Phe Ala Glu Ala Phe Asp Glu Val Cys Gly Arg Val  
 580 585 590  
 Gly Pro Gly Val Arg Glu Val Val Phe Gly Ser Asp Ala Gly Glu Leu  
 595 600 605



Asp Arg Thr Val Trp Ala Gln Ala Gly Leu Phe Ala Leu Glu Val Ala  
 610 615 620  
 Leu Phe Arg Leu Leu Glu Ser Trp Gly Val Arg Pro Gly Cys Leu Ile  
 625 630 635 640  
 Gly His Ser Val Gly Glu Leu Ser Ala Ala Cys Val Ala Gly Leu Trp  
 645 650 655  
 Ser Leu Glu Asp Ala Cys Arg Val Val Ala Ala Arg Ala Arg Leu Met  
 660 665 670  
 Gln Ala Leu Pro Ala Gly Gly Val Met Val Ala Val Arg Ala Glu Ala  
 675 680 685  
 Gly Glu Leu Ala Gly Phe Leu Gly Glu Asp Val Val Ile Ala Ser Val  
 690 695 700  
 Asn Ala Pro Gly Gln Val Val Ile Ala Gly Pro Glu Gly Gly Val Glu  
 705 710 715 720  
 Arg Val Val Ala Ala Cys Gly Ala Arg Ser Arg Arg Leu Ala Val Ser  
 725 730 735  
 His Ala Phe His Ser Pro Leu Val Glu Pro Met Leu Gly Glu Phe Arg  
 740 745 750  
 Arg Val Val Glu Ser Val Ala Phe Gly Val Pro Ser Leu Arg Val Val  
 755 760 765  
 Ser Asn Val Thr Gly Ala Trp Val Asp Pro Glu Glu Trp Gly Thr Pro  
 770 775 780  
 Glu Tyr Trp Val Arg Gln Val Arg Glu Pro Val Arg Phe Ala Asp Gly  
 785 790 795 800  
 Val Ala Thr Leu Leu Asp Ala Gly Val Arg Thr Phe Val Glu Leu Gly  
 805 810 815  
 Pro Ala Gly Ala Leu Thr Ser Met Val Ser His Cys Ala Asp Ala Thr  
 820 825 830  
 Ala Thr Ser Val Thr Ala Val Pro Thr Leu Arg Pro Asp His Asp Glu  
 835 840 845  
 Ser Arg Thr Val Leu Ser Ala Ala Ala Ser Leu Tyr Val Gln Gly His  
 850 855 860  
 Pro Val Asp Trp Ala Pro Leu Phe Pro Arg Ala Arg Thr Val Asp Leu  
 865 870 875 880  
 Pro Thr Tyr Pro Phe Gln His Gln His Tyr Trp Leu Asp Val Pro Pro  
 885 890 895  
 Leu Phe Thr Ala Ser Ser Ala Ala Gln Asp Gly Gly Trp Arg Tyr Arg  
 900 905 910  
 Ile His Trp Arg Arg Leu Gly Thr Arg Asp Ser Gly Asp Arg Leu Ser  
 915 920 925  
 Gly Arg Trp Leu Leu Leu Val Pro Glu Ser Asp Gly Thr Glu Pro Trp  
 930 935 940  
 Val Glu Gly Ala Glu Lys Met Leu Ala Glu Arg Gly Cys Glu Val Val

945	950	955	960
His Val Pro Ile Ala Ala Thr Ala Asp Arg Asp Ala Met Val Gly Ala			
	965	970	975
Val Arg Glu Ser Val Glu Asp Gly Arg Val Asp Gly Val Leu Ser Leu			
	980	985	990
Leu Ala Leu Asp Gly Arg Pro His Pro Asp Ala Ala Ala Val Pro Thr			
	995	1000	1005
Gly Leu Val Ala Thr Ala Gln Val Val Gln Val Ser Asp Glu Leu Gly			
	1010	1015	1020
Ile Gly Pro Leu Trp Val Ala Thr Arg Gln Ala Val Ser Val Asp Gly			
	1025	1030	1035
			1040
Ala Asp Glu Ala Asp Gly Ala Gly Arg Thr Arg Lys Ala Asp Asp Pro			
	1045	1050	1055
Ala Asp Val Ala Gln Ala Ala Val Trp Gly Leu Gly Arg Val Ala Ala			
	1060	1065	1070
Leu Glu Lys Pro Arg Leu Trp Gly Gly Leu Val Asp Leu Pro Ala Arg			
	1075	1080	1085
Ala Asp Glu Arg Met Arg Asp Leu Val Ala Gln Ala Leu Thr Ala Pro			
	1090	1095	1100
Asp Ala Glu Asp Gln Leu Ala Val Arg Ala Asp Gly Ile Ala Val Arg			
	1105	1110	1115
			1120
Arg Leu Val Arg Ser Ala Ala Ser Ala Pro Ala Asp Asp Trp Gln Pro			
	1125	1130	1135
Ser Gly Thr Val Leu Val Thr Gly Gly Thr Gly Gly Val Gly Ala Asn			
	1140	1145	1150
Val Ala Arg Trp Leu Val Thr Gln Asp Ile Gln His Leu Leu Leu Val			
	1155	1160	1165
Ser Arg Arg Gly Pro Asp Ala Pro Gly Ala Ala Glu Leu Leu Ala Glu			
	1170	1175	1180
Leu Ser Ala Ser Gly Thr Ser Val Thr Ile Glu Pro Cys Asp Val Thr			
	1185	1190	1195
			1200
Asp Ala Asp Ala Val Arg Arg Leu Ile Gly Ala Val Pro Ala Glu Arg			
	1205	1210	1215
Pro Leu Ser Thr Val Val His Ala Ala Gly Val Leu Asp Asp Cys Leu			
	1220	1225	1230
Ile Asp Ala Leu Thr Pro Gln Arg Leu Ala Ala Ala Leu Glu Val Lys			
	1235	1240	1245
Ala Lys Gly Ala Leu Asn Leu His Glu Ala Ala Gly Glu Ala His Leu			
	1250	1255	1260
Val Leu Phe Ser Ser Leu Ala Gly Thr Thr Gly Thr Lys Gly Gln Gly			
	1265	1270	1275
			1280
Asn Tyr Ala Ala Ala Asn Ala Tyr Leu Asp Ala Leu Ala Glu Arg Arg			
	1285	1290	1295

Arg Ala Asp Gly Leu Pro Ala Thr Ser Val Ala Trp Gly Ala Trp Gln  
 1300 1305 1310  
 Gly Ala Gly Met Val Ala Asp Ala Ala Val Ala His Arg Thr Arg Arg  
 1315 1320 1325  
 Tyr Gly Leu Pro Leu Met Ser Pro Asp Arg Ala Val Ala Thr Leu Arg  
 1330 1335 1340  
 Gln Val Met Ala Glu Pro Val Ala Thr Gln Val Val Ala Asp Val Asp  
 1345 1350 1355 1360  
 Trp Gln Arg Phe Val Ala Asp Phe Thr Ala Val Arg Pro Ser Arg Leu  
 1365 1370 1375  
 Leu Ala Asp Leu Pro Glu Val Arg Ser Leu Gly Glu Gln Arg Lys Asp  
 1380 1385 1390  
 Gly Pro Gly Gly Gln Gly Glu Glu Asp Gly Leu Ala Ser Lys Leu Ala  
 1395 1400 1405  
 Ala Leu Pro Glu Ala Asp Arg Arg Arg Ala Val Leu Asp Leu Val Glu  
 1410 1415 1420  
 Glu Leu Val Leu Gly Val Leu Gly His Glu Thr Arg Ala Ala Ile Gly  
 1425 1430 1435 1440  
 Pro Asp Ser Ser Phe His Ala Ile Gly Phe Asp Ser Leu Thr Ala Val  
 1445 1450 1455  
 Glu Leu Arg Asn Leu Leu Thr Val Arg Leu Gly Met Lys Leu Pro Ala  
 1460 1465 1470  
 Thr Leu Val Tyr Asp His Pro Thr Leu Ser Ser Leu Ala Asp His Leu  
 1475 1480 1485  
 His Glu Gln Leu Val Ile Asp Gly Thr Pro Met Thr Asp Thr Ala Ala  
 1490 1495 1500  
 Asp Leu Leu Ala Glu Leu Asp Ala Leu Ala Ala Arg Leu Ala Ala Val  
 1505 1510 1515 1520  
 Gly Leu Glu Pro Glu Ala Arg Ala Arg Ile Gly Arg Arg Leu Lys Asp  
 1525 1530 1535  
 Met Gln Thr Ala Cys Glu Pro Arg Ser Glu Ser Ser Arg Asp Leu Lys  
 1540 1545 1550  
 Ser Ala Ser Arg Thr Glu Val Leu Asp Phe Leu Thr Asn Glu Leu Gly  
 1555 1560 1565  
 Ile Ser Arg  
 1570  
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 <211> 3500  
 <212> PRT  
 <213> Streptomyces parvulus TU4055  
 <400> 4  
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 1 5 10 15

Asn Leu Gln Glu Ala Arg Gln Arg Val His Glu Leu Glu Glu Ser Glu  
 20 25 30  
 Arg Glu Pro Ile Ala Ile Val Gly Met Ser Cys Arg Leu Pro Gly Gly  
 35 40 45  
 Val Asn Ser Pro Glu Glu Phe Trp Ser Leu Leu Glu Ala Gly Thr Asp  
 50 55 60  
 Ala Val Ser Glu Phe Pro Arg Asp Arg Gly Trp Asp Val Glu Arg Leu  
 65 70 75 80  
 Tyr Asp Pro Asp Pro Asp Ala Pro Gly Lys Ser Tyr Val Arg Glu Gly  
 85 90 95  
 Gly Phe Leu Asp Gly Ala Gly Arg Phe Asp Pro Ala Phe Phe Gly Ile  
 100 105 110  
 Ser Pro Arg Glu Ala Val Val Met Asp Pro Gln Gln Arg Leu Leu Leu  
 115 120 125  
 Glu Cys Ser Trp Glu Ala Ile Glu Arg Ser Arg Ile Asp Pro Lys Thr  
 130 135 140  
 Leu His Gly Ser Arg Ala Gly Val Phe Val Gly Ser Asn Gly Gln Asp  
 145 150 155 160  
 Tyr Gly Thr Leu Leu Leu Arg Ala Asp Asp Arg Ser His Ala Tyr Leu  
 165 170 175  
 Ala Thr Gly Ala Ser Ala Ser Val Leu Ser Gly Arg Ile Ser Tyr Thr  
 180 185 190  
 Leu Gly Leu Glu Gly Pro Ala Val Thr Ile Ser Thr Ala Cys Ser Ser  
 195 200 205  
 Ser Leu Val Ala Leu His Leu Ala Ala Arg Ala Leu Arg Ala Gly Glu  
 210 215 220  
 Cys Glu Leu Ala Leu Ala Gly Gly Val Thr Val Met Pro Thr Thr Arg  
 225 230 235 240  
 Leu Phe Glu Val Phe Ser Arg Gln Arg Gly Leu Ala Gly Asp Gly Arg  
 245 250 255  
 Cys Lys Ala Phe Ala Ala Gly Ala Asp Gly Thr Gly Trp Gly Glu Gly  
 260 265 270  
 Val Gly Val Leu Val Leu Glu Arg Leu Ser Val Ala Arg Arg Asn Gly  
 275 280 285  
 His Arg Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly  
 290 295 300  
 Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val  
 305 310 315 320  
 Ile Arg Ala Ala Leu Ala Ser Ala Arg Leu Ala Pro Glu Asp Val Asp  
 325 330 335  
 Ala Val Glu Ala His Gly Thr Gly Thr Ser Leu Gly Asp Pro Ile Glu  
 340 345 350  
 Ala Gln Ala Leu Leu Ala Thr Tyr Gly Arg Gly Arg Asp Ala Glu Arg



355					360					365					
Pro	Leu	Trp	Leu	Gly	Ser	Val	Lys	Ser	Asn	Ile	Gly	His	Ala	Gln	Ala
370						375					380				
Ala	Ala	Gly	Val	Ala	Gly	Val	Ile	Lys	Met	Val	Lys	Ala	Met	Gln	Ala
385					390					395					400
Gly	Thr	Leu	Pro	Arg	Thr	Leu	His	Val	Asp	Glu	Pro	Ser	Gly	Glu	Val
				405					410					415	
Asp	Trp	Asp	Ser	Gly	Ala	Val	Arg	Leu	Leu	Thr	Glu	Ala	Arg	Asp	Trp
			420					425					430		
Pro	Ser	Glu	Glu	Gly	Arg	Leu	Arg	Arg	Ala	Gly	Val	Ser	Ser	Phe	Gly
		435					440					445			
Ile	Ser	Gly	Thr	Asn	Ala	His	Val	Ile	Leu	Glu	Glu	Pro	Pro	Ala	Glu
	450					455					460				
Asp	Ala	Val	Pro	Glu	Pro	Glu	Ala	Gly	Asp	Val	Val	Pro	Trp	Val	Leu
465					470					475					480
Ser	Ala	Arg	Ser	Ala	Glu	Ala	Leu	Arg	Glu	Gln	Ala	Ala	Arg	Leu	Ala
				485					490					495	
Ser	Val	Ala	Gly	Gly	Leu	Asn	Val	Val	Asp	Val	Gly	Trp	Ser	Leu	Ala
			500					505					510		
Ser	Thr	Arg	Ala	Ala	Phe	Glu	His	Arg	Ala	Val	Val	Val	Gly	Arg	Glu
		515					520						525		
Arg	Glu	Glu	Leu	Leu	Ala	Gly	Leu	Phe	Ala	Val	Ala	Ala	Gly	Arg	Pro
	530					535					540				
Ala	Ala	Asn	Val	Val	Thr	Gly	Pro	Val	Ser	Ser	Gly	Arg	Pro	Ala	Phe
545					550					555					560
Val	Phe	Ala	Gly	Gln	Gly	Ser	Gln	Arg	Leu	Gly	Met	Gly	Arg	Gly	Leu
			565						570					575	
Tyr	Glu	Arg	Phe	Pro	Val	Phe	Ala	Glu	Ala	Phe	Asp	Glu	Val	Cys	Gly
			580					585					590		
Arg	Val	Gly	Pro	Gly	Val	Arg	Glu	Val	Val	Phe	Gly	Ser	Asp	Ala	Gly
		595					600					605			
Glu	Leu	Asp	Arg	Thr	Val	Trp	Ala	Gln	Ala	Gly	Leu	Phe	Ala	Leu	Glu
	610					615					620				
Val	Ala	Leu	Phe	Arg	Leu	Leu	Glu	Ser	Trp	Gly	Val	Arg	Pro	Gly	Cys
625					630					635					640
Leu	Ile	Gly	His	Ser	Val	Gly	Glu	Leu	Ser	Ala	Ala	Cys	Val	Ala	Gly
			645						650					655	
Leu	Trp	Ser	Leu	Glu	Asp	Ala	Cys	Arg	Val	Val	Ala	Ala	Arg	Ala	Arg
			660					665					670		
Leu	Met	Gln	Ala	Leu	Pro	Ala	Gly	Gly	Val	Met	Val	Ala	Val	Arg	Ala
		675					680					685			
Glu	Ala	Gly	Glu	Leu	Ala	Gly	Phe	Leu	Gly	Glu	Asp	Val	Val	Ile	Ala
	690					695					700				

Ser Val Asn Ala Pro Gly Gln Val Val Ile Ala Gly Pro Glu Gly Gly  
 705 710 715 720  
 Val Glu Arg Val Val Ala Ala Cys Gly Ala Arg Ser Arg Arg Leu Ala  
 725 730 735  
 Val Ser His Ala Phe His Ser Pro Leu Val Glu Pro Met Leu Gly Glu  
 740 745 750  
 Phe Arg Arg Val Val Glu Ser Val Ala Phe Gly Val Pro Ser Leu Arg  
 755 760 765  
 Val Val Ser Asn Val Thr Gly Ala Trp Val Asp Pro Glu Glu Trp Gly  
 770 775 780  
 Thr Pro Glu Tyr Trp Val Arg Gln Val Arg Glu Pro Val Arg Phe Ala  
 785 790 795 800  
 Asp Gly Val Ala Thr Leu Leu Asp Ala Gly Val Arg Thr Phe Val Glu  
 805 810 815  
 Leu Gly Pro Ala Gly Thr Leu Thr Ser Met Val Ser His Cys Ala Asp  
 820 825 830  
 Ala Thr Ala Thr Ser Val Thr Ala Val Pro Thr Leu Arg Pro Asp His  
 835 840 845  
 Asp Glu Ser Arg Thr Val Leu Ser Ala Ala Ala Ser Leu Tyr Val Gln  
 850 855 860  
 Gly His Pro Val Asp Trp Ala Pro Leu Phe Pro Arg Ala Arg Thr Val  
 865 870 875 880  
 Asp Leu Pro Thr Tyr Pro Phe Gln His Gln His Tyr Trp Met Met Asn  
 885 890 895  
 Thr Gly Ser Ala Ala Glu Pro Ala Glu Leu Gly Leu Gly Asp Ala Arg  
 900 905 910  
 His Pro Leu Leu Gly Ser Val Val Thr Val Ala Gly Asp Asp Lys Val  
 915 920 925  
 Val Phe Ala Gly Arg Leu Ala Leu Arg Thr His Pro Trp Leu Ala Asp  
 930 935 940  
 His Thr Val Leu Asp Ala Val Leu Leu Pro Ala Thr Ala Phe Leu Glu  
 945 950 955 960  
 Leu Ala Val Arg Ala Gly Glu Glu Val Ser Cys Pro Val Val His Asp  
 965 970 975  
 Leu Thr Leu His Arg Pro Leu Val Val Pro Glu Arg Gly Ala Val Gln  
 980 985 990  
 Val Gln Met Ala Val Gly Ala Pro Glu Ala Asp Gly Arg Arg Glu Val  
 995 1000 1005  
 Arg Val Tyr Ser Arg Pro Asp Asp Ala Glu His Glu Trp Thr Leu  
 1010 1015 1020  
 His Ala Ala Gly Leu Leu Ala Ser Ala Ala Thr Ala Glu Pro Ala Val  
 1025 1030 1035 1040

Ala Ala Gly Ala Trp Pro Pro Pro Glu Ala Gln Ala Val Asp Leu Asp  
 1045 1050 1055  
 Gly Phe Tyr Ala Gly Leu Ala Glu His Gly Tyr His Tyr Gly Pro Leu  
 1060 1065 1070  
 Phe Gln Gly Val Arg Ala Ala Trp Arg Leu Gly Asp Asp Val Leu Ala  
 1075 1080 1085  
 Glu Ile Val Leu Pro Glu Ala Ala Gly Ala Asp Ala Ala Arg Tyr Gly  
 1090 1095 1100  
 Met His Pro Ala Leu Leu Asp Ala Val Leu His Ala Ala Arg Leu Gly  
 1105 1110 1115 1120  
 Ala Phe Arg Glu Arg Ser Glu Glu Lys Tyr Leu Pro Phe Ala Trp Glu  
 1125 1130 1135  
 Gly Val Thr Leu Arg Thr Arg Gly Ala Thr Ala Val Arg Ala Arg Ile  
 1140 1145 1150  
 Ser Arg Ala Gly Thr Asp Ala Ile Arg Leu Asp Val Thr Asp Thr Ala  
 1155 1160 1165  
 Asp Arg Pro Val Leu Thr Ala Glu Ser Leu Thr Leu Arg Pro Val Ser  
 1170 1175 1180  
 Ala Gly Gln Leu Met Ala Val Pro Arg Asp Ser Leu Phe Arg Val Asp  
 1185 1190 1195 1200  
 Trp Val Ser Ala Pro Ala Ala Asn Gly Pro Gly Leu Arg Leu Ala Arg  
 1205 1210 1215  
 Ala Ala Thr Val Glu Ala Ala Leu Ala Ala Asp Ala Asp Ile Val Val  
 1220 1225 1230  
 Val Pro Cys Leu Asp Ser Glu Gly Pro His Gln Ala Thr Tyr Gln Ala  
 1235 1240 1245  
 Leu Glu Leu Leu Gln Arg Trp Leu Ala Ala Asp Thr Gly Thr Thr Thr  
 1250 1255 1260  
 Leu Ala Leu Leu Thr His Arg Ala Val Ala Val Gly Asp Asp Val His  
 1265 1270 1275 1280  
 Asp Leu His His Ala Pro Leu Trp Gly Leu Val Arg Thr Ala Gln Thr  
 1285 1290 1295  
 Glu His Pro Gly Cys Phe Arg Leu Val Asp Ser Asp Asp Pro Asp Pro  
 1300 1305 1310  
 Thr Thr Asp Val Leu Ala Ala Ala Leu Ala Thr Gly Glu Pro Gln Val  
 1315 1320 1325  
 Ala Ile Arg Asp Gly Ala Val Leu Ala Pro Arg Leu Thr Ala Ala Ser  
 1330 1335 1340  
 Ala Pro Arg Glu Pro Ala Glu Trp Asp Ala Glu Gly Thr Val Leu Ile  
 1345 1350 1355 1360  
 Thr Gly Gly Ser Gly Ala Leu Ala Gly Ile Val Ala Gln His Leu Val  
 1365 1370 1375  
 Ala Arg His Gly Val Arg Arg Leu Val Leu Ala Ser Arg Ser Gly Arg

1380	1385	1390
Pro Ala Pro Gly Ala Asp Leu Leu Asp Ala Asp Val Thr Ala Val Ser 1395 1400 1405		
Cys Asp Val Ser Asp Arg Asp Ala Val Ala Ala Leu Leu Ala Ser Val 1410 1415 1420		
Pro Asp Glu His Pro Leu Thr Ala Val Val His Thr Ala Gly Val Leu 1425 1430 1435 1440		
Asp Asp Gly Val Leu His Ala Leu Thr Thr Glu Arg Ile Asp Thr Ser 1445 1450 1455		
Phe Ala Ala Lys Val Asp Gly Ala Arg His Leu His Glu Leu Thr Ser 1460 1465 1470		
His Leu Asp Leu Thr Ala Phe Val Leu Phe Ser Ser Ala Ser Ala Val 1475 1480 1485		
Leu Gly Ala Ala Gly Gln Gly Asn Tyr Ala Ala Ala Asn Ala Tyr Leu 1490 1495 1500		
Asp Ala Leu Ala Ala His Arg Arg Ser Asn Asp Leu Pro Ala Val Ser 1505 1510 1515 1520		
Leu Ala Trp Gly Leu Trp Ala Glu His Glu Gly Met Ala Arg Gly Leu 1525 1530 1535		
Gly Asp Ala Glu Leu Thr Arg Ile Ser Arg Ile Gly Val Thr Ala Leu 1540 1545 1550		
Ser Ala Glu Asp Gly Met Arg Leu Phe Asp Ala Gly Cys Ala Gly Asp 1555 1560 1565		
Gln Ser Gln Leu Val Pro Met Arg Val Asp Thr Ala Ala Leu Arg Ala 1570 1575 1580		
Arg Arg Asp His Leu Pro Ala Pro Met Trp Ser Leu Val Pro Glu Arg 1585 1590 1595 1600		
Thr Arg Ala Ala Arg Thr Gln Pro Ala Ala Ser Leu Arg Asp Arg Leu 1605 1610 1615		
Ala Glu Leu Thr Ala Pro Glu Arg Lys Arg Thr Val Leu Asn Leu Val 1620 1625 1630		
Arg Asn Ala Val Ala Asp Thr Leu Gly His Asn Ala Ala Asp Gly Val 1635 1640 1645		
Pro Pro Asp Gln Ser Leu Asp Ala Ala Gly Phe Asp Ser Leu Thr Ala 1650 1655 1660		
Val Glu Phe Arg Asn Arg Leu Ser Ala Val Thr Asp Leu Arg Leu Pro 1665 1670 1675 1680		
Ala Thr Leu Thr Tyr Asp His Pro Thr Pro Ala Ala Ile Ala Glu His 1685 1690 1695		
Ile Leu Thr Arg Leu Thr Leu Leu Lys Glu Thr Ala Ala Pro Ala Val 1700 1705 1710		
Gly Thr Ala Pro Val Ala Ala Pro Thr Glu Asp Asp Ala Ile Val Ile 1715 1720 1725		



Val Gly Met Ala Gly Arg Phe Pro Gly Gly Val Arg Thr Pro Glu Gly  
 1730 1735 1740  
 Leu Trp Asp Leu Val His Ser Gly Thr Asp Ala Ile Ser Glu Trp Pro  
 1745 1750 1755 1760  
 Thr Asp Arg Gly Trp Asp Val Glu Asn Leu Tyr Asp Pro Asp Pro Asp  
 1765 1770 1775  
 Ala Val Gly Lys Ser Tyr Val Arg His Gly Gly Phe Leu His Asp Val  
 1780 1785 1790  
 Ala Gly Phe Asp Ala Gly Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu  
 1795 1800 1805  
 Ala Met Asp Pro Gln Gln Arg Leu Leu Leu Glu Cys Ser Tyr Glu Ala  
 1810 1815 1820  
 Leu Glu Arg Ala Gly Ile Asp Pro Ala Thr Leu Arg Gly Ser Arg Ser  
 1825 1830 1835 1840  
 Gly Val Tyr Ala Gly Val Met Tyr His Glu Tyr Ala Ser Arg Leu Gly  
 1845 1850 1855  
 Ala Thr Pro Ala Gly Phe Glu Gly Thr Leu Gly Thr Gly Ser Ser Gly  
 1860 1865 1870  
 Ser Ile Ala Ser Gly Arg Ile Ser Tyr Thr Phe Asp Leu Thr Gly Pro  
 1875 1880 1885  
 Ala Val Thr Val Asp Thr Ala Cys Ser Thr Ser Leu Val Gly Leu His  
 1890 1895 1900  
 Leu Ala Val Gln Ala Leu Arg Ala Gly Glu Cys Glu Leu Ala Leu Ala  
 1905 1910 1915 1920  
 Gly Gly Val Thr Val Met His Thr Pro Arg Pro Phe Val Glu Phe Ser  
 1925 1930 1935  
 Arg Gln Arg Gly Leu Ala Ala Asp Gly Arg Ser Lys Ala Phe Ala Ala  
 1940 1945 1950  
 Ser Ala Asp Gly Val Ala Trp Ala Glu Gly Ala Gly Ile Leu Val Leu  
 1955 1960 1965  
 Glu Arg Leu Ser Ala Ala Arg Arg Asn Gly His Arg Val Leu Ala Val  
 1970 1975 1980  
 Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr  
 1985 1990 1995 2000  
 Ala Pro Asn Gly Pro Ser Gln Gln Arg Val Ile Arg Ala Ala Leu Ala  
 2005 2010 2015  
 Ser Ala Gly Leu Gly Pro Ala Asp Val Asp Val Val Glu Ala His Gly  
 2020 2025 2030  
 Thr Gly Thr Ala Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala  
 2035 2040 2045  
 Thr Tyr Gly Arg Gly Arg Asp Ala Asp Arg Pro Leu Trp Leu Gly Ser  
 2050 2055 2060

Val Lys Ser Asn Ile Gly His Thr Gln Ala Ala Ala Gly Val Ala Ser  
 2065 2070 2075 2080  
 Val Ile Lys Met Val Gln Ala Met Gln Ala Gly Val Leu Pro Arg Thr  
 2085 2090 2095  
 Leu His Val Asp Glu Pro Ser Gly Glu Val Asp Trp Asp Ser Gly Ala  
 2100 2105 2110  
 Val Arg Leu Leu Thr Glu Ala Arg Glu Trp Pro Ser Gly Glu Gly Arg  
 2115 2120 2125  
 Val Arg Arg Ala Gly Val Ser Ser Phe Gly Ile Ser Gly Thr Asn Ala  
 2130 2135 2140  
 His Val Ile Leu Glu Glu Pro Pro Ala Glu Asp Ala Leu Pro Glu Pro  
 2145 2150 2155 2160  
 Glu Ala Gly Asp Val Val Pro Trp Val Leu Ser Ala Arg Ser Ala Glu  
 2165 2170 2175  
 Ala Leu Arg Glu Gln Ala Ala Arg Leu Ala Ser Val Ala Gly Gly Leu  
 2180 2185 2190  
 Asn Val Val Asp Val Gly Trp Ser Leu Ala Ser Thr Arg Ala Ala Phe  
 2195 2200 2205  
 Glu His Arg Ala Val Val Val Gly Gly Asp Arg Glu Glu Leu Leu Gly  
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 Gly Met Gly Arg Glu Leu Leu Gly Ser Ser Leu Val Phe Ala Glu Ser  
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 Met Arg Glu Cys Ala Ala Ala Leu Ser Pro Phe Val Asp Phe Ser Val  
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 Val Asp Val Leu Gly Ser Ala Gly Glu Leu Gly Arg Val Glu Val Val  
 2290 2295 2300  
 Gln Pro Ala Leu Trp Ala Val Met Val Ser Leu Ala Arg Val Trp Arg  
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 Ser Trp Gly Val Pro Val Ala Ala Val Val Gly His Ser Gln Gly Glu  
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 Leu Gly Gly Met Val Ser Val Ala Leu Ser Arg Glu Arg Val Val Ser  
 2370 2375 2380  
 Leu Ile Ala Gly Val Pro Gly Val Ser Val Ala Ala Val Asn Gly Ser  
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 Ser Ser Thr Val Val Ser Gly Glu Ala Ala Gly Leu Glu Arg Val Leu

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Tyr Ala Ser His Ser Val Gln Val Glu Leu Ile Arg Glu Glu Leu Leu		
2435	2440	2445
Gly Val Leu Asp Gly Ile Val Pro Arg Ser Gly Glu Ile Pro Phe Val		
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Ser Thr Val Thr Gly Glu Arg Ile Asp Thr Val Glu Leu Gly Ala Glu		
2465	2470	2475 2480
Tyr Trp Tyr Arg Asn Leu Arg Gln Thr Val Glu Phe Gln Ser Val Val		
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Glu Gly Leu Val Ala Gln Gly Cys Arg Val Phe Leu Glu Ser Ser Pro		
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His Pro Val Leu Thr Val Gly Ile Glu Glu Ser Ala Asp Arg Val Val		
2515	2520	2525
Ala Leu Glu Ser Leu Arg Arg Gly Glu Gly Gly Leu Arg Arg Leu Val		
2530	2535	2540
Asp Ala Ala Gly Glu Ala Trp Val Arg Gly Val Pro Ile Asp Trp Ala		
2545	2550	2555 2560
Gly Met Leu Ala Gly Gly Arg Arg Val Asp Leu Pro Thr Tyr Pro Phe		
2565	2570	2575
Gln His Gln Pro Tyr Trp Leu Asp Ser Pro Arg His Pro Ala Gly Asp		
2580	2585	2590
Val Thr Ala Val Gly Leu Thr Glu Ala Gly His Ala Phe Val Pro Ala		
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Ala Val Asp Leu Pro Asp Gly Gln Arg Val Trp Thr Gly Arg Leu Ser		
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Leu Pro Ser Tyr Pro Trp Leu Ala Asp His Gln Val Leu Gly Gln Val		
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Leu Leu Pro Gly Val Val Trp Val Glu Leu Ala Leu His Ala Gly His		
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Gln Ala Gly Cys Asp Ser Val Asp Glu Leu Thr Leu Gln Ser Pro Leu		
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Val Leu Gly Ala Ser Asp Thr Val Gln Val Arg Val Val Val Thr Glu		
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Thr Glu Glu Pro Gly Thr Arg Thr Val Ser Met His Ser Arg Arg Asp		
2690	2695	2700
Asp Gly Ser Trp Val Thr His Ala Glu Gly Ile Leu Gly Ala Gly Gly		
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Pro Pro Pro Glu Pro Leu Pro Glu Trp Pro Pro Thr Gly Ala Met Pro		
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Leu Asp Val Glu Gly Phe Tyr Asp Glu Leu Ala Ala Gly Gly Tyr His		
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 Thr Glu Glu Val Pro Thr Ala Val Arg Glu Ala Thr Ala Gln Val Leu  
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 Ile Thr Leu Val Asp Leu Asp Ala His Pro Ala Ser Leu Thr Ala Leu  
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 Gly Ser Leu Gly Thr Gly Thr Val Leu Ile Thr Gly Gly Thr Gly Thr  
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 3075 3080 3085



Arg Leu Leu Leu Val Ser Arg Arg Gly Pro Ala Ala Asp Gly Ala Asp  
 3090 3095 3100

Arg Leu His Ala Glu Leu Thr Gly His Gly Ala His Val Asp Ile Val  
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Ala Ala Asp Leu Gly Asp Arg Thr Ser Val Ala Ala Leu Leu Ala Thr  
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Val Asp Ala Asp His Pro Leu Ser Ala Val Val His Ala Ala Gly Ala  
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Leu Asp Asp Gly Val Leu Gly Thr Arg Ser Ala Asp Trp Leu Asp Pro  
 3155 3160 3165

Val Leu Arg Pro Lys Ala Asp Ala Ala Trp His Leu His Glu Leu Thr  
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Ala Glu Leu Pro Leu Thr Ala Phe Val Met Phe Ser Ser Ala Ala Ser  
 3185 3190 3195 3200

Val Leu Gly Ala Ala Gly Gln Ala Asn Tyr Ala Ala Ala Asn Gly Phe  
 3205 3210 3215

Leu Asp Ala Leu Ala Ala His Arg Ala Ala Arg Gly Leu Pro Gly Thr  
 3220 3225 3230

Ser Leu Ala Trp Gly Leu Trp Glu His Arg Ser Glu Leu Thr Arg His  
 3235 3240 3245

Thr Gly Ser Pro Ser Arg Ser Ile Ala Ala Val Gly Ala Leu Ser Thr  
 3250 3255 3260

Ala Glu Ala Leu Ala Ala Phe Asp Ala Gly Leu Ala Ser Gly Glu Pro  
 3265 3270 3275 3280

Leu Ala Val Pro Ile Arg Leu Glu Ser Thr Ser Ser Glu Glu Val Pro  
 3285 3290 3295

Pro Met Leu Arg Gly Leu Val Arg Val Arg Arg Arg Ala Ala Thr Gly  
 3300 3305 3310

Thr Glu Pro Ala Ala Ser Ala Gly Ala Ala Gln Glu Val Arg Gln Leu  
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Ala Glu Leu Gly Ala Asp Glu Arg Gln Arg Arg Val Gln Arg Ile Val  
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Leu Asp Thr Ala Ala Ala Val Leu Gly His Asp Ser His Asp Ala Ile  
 3345 3350 3355 3360

Pro Leu Thr Arg Gly Phe Leu Glu Leu Gly Phe Asp Ser Leu Thr Ala  
 3365 3370 3375

Val Arg Leu Arg Asn Arg Leu Ala Arg Arg Leu Gly Leu Arg Leu Pro  
 3380 3385 3390

Ala Thr Val Val Phe Asp His Pro Ser Pro Ala Ala Leu Ala Ala His  
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Leu Val Glu His Leu Val Gly Thr Val Asp Pro Thr Ala Gln Ala Met  
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Glu Gln Leu Glu Ala Leu Arg Arg Ser Val His Ala Ala Thr Pro Ala

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Thr	Asp	Pro	Ile	Ala	Ile	Ile	Gly	Met	Gly	Cys	Arg	Leu	Pro	Gly	Gly
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Val	Arg	Thr	Pro	Glu	Asp	Leu	Trp	Asp	Leu	Val	Glu	Lys	Lys	His	Asp
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Tyr	Asp	Pro	Asp	Pro	Asp	Ala	Pro	Gly	Lys	Ala	Tyr	Val	Arg	Glu	Gly
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Gly	Phe	Val	His	Asp	Val	Ala	Gly	Phe	Asp	Ala	Gly	Phe	Phe	Gly	Ile
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Ser	Pro	Arg	Glu	Ala	Leu	Ala	Met	Asp	Pro	Gln	His	Arg	Leu	Leu	Leu
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Tyr	Ala	Thr	Arg	Leu	Pro	Ser	Ile	Asp	Glu	Glu	Leu	Glu	Gly	Val	Ile
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Gly	Ile	Gly	Asn	Ala	Gly	Ser	Val	Ala	Ser	Gly	Arg	Val	Ser	Tyr	Thr
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Leu	Gly	Leu	Asn	Gly	Pro	Ala	Val	Thr	Val	Asp	Thr	Ala	Cys	Ser	Ser
		195					200					205			
Ser	Leu	Val	Ala	Leu	His	Leu	Ala	Ala	Gln	Ala	Leu	Arg	Gln	Gly	Gln
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Cys	Thr	Leu	Ala	Leu	Ala	Gly	Gly	Ala	Ser	Val	Ile	Ala	Ala	Pro	Thr

59

Leu Val Phe Ala Glu Ser Met Arg Glu Cys Ala Ala Ala Leu Ser Pro  
 580 585 590  
 Phe Val Asp Phe Ser Val Val Asp Val Leu Gly Ser Ala Gly Glu Leu  
 595 600 605  
 Gly Arg Val Glu Val Val Gln Pro Ala Leu Trp Ala Val Met Val Ser  
 610 615 620  
 Leu Ala Arg Val Trp Arg Ser Trp Gly Val Pro Val Ala Ala Val Val  
 625 630 635 640  
 Gly His Ser Gln Gly Glu Ile Ala Ala Ala Thr Val Ala Gly Ala Leu  
 645 650 655  
 Ser Val Gly Asp Ala Ala Arg Val Val Ala Leu Arg Ser Arg Leu Ile  
 660 665 670  
 Ala Glu Arg Leu Ser Gly Leu Gly Gly Met Val Ser Val Ala Leu Ser  
 675 680 685  
 Arg Glu Arg Val Val Ser Leu Ile Ala Gly Val Pro Gly Val Ser Val  
 690 695 700  
 Ala Ala Val Asn Gly Ser Ser Ser Thr Val Val Ser Gly Glu Ala Ala  
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 Gly Leu Glu Arg Val Leu Ala Ala Cys Val Ser Ser Gly Val Arg Ala  
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 Arg Arg Ile Asp Val Asp Tyr Ala Ser His Ser Val Gln Val Glu Leu  
 740 745 750  
 Ile Arg Glu Glu Leu Leu Gly Val Leu Asp Gly Ile Val Pro Arg Ser  
 755 760 765  
 Gly Glu Ile Pro Phe Val Ser Thr Val Thr Gly Glu Arg Ile Asp Thr  
 770 775 780  
 Val Glu Leu Gly Ala Glu Tyr Trp Tyr Arg Asn Leu Arg Gln Thr Val  
 785 790 795 800  
 Glu Phe Gln Ser Val Val Glu Gly Leu Val Ala Gln Gly Cys Arg Val  
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 Phe Leu Glu Ser Ser Pro His Pro Val Leu Thr Val Gly Ile Glu Glu  
 820 825 830  
 Ser Ala Asp Arg Val Val Ala Leu Glu Ser Leu Arg Arg Gly Glu Gly  
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 Gly Leu Arg Arg Leu Val Asp Ala Ala Gly Glu Ala Trp Val Arg Gly  
 850 855 860  
 Val Pro Ile Asp Trp Ala Gly Met Leu Ala Gly Gly Arg Arg Val Asp  
 865 870 875 880  
 Leu Pro Thr Tyr Pro Phe Gln His Gln Pro Tyr Trp Leu Asp Ser Pro  
 885 890 895  
 Arg His Pro Ala Gly Asp Val Thr Gly Pro Gly Asp Asp Glu Phe Trp  
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Ala Ala Val Glu His Gly Glu Ala Thr Glu Leu Ala Asp Leu Leu Arg  
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 Leu Leu Pro Thr Leu Ala Thr Trp Arg Arg Asp Arg Gln Arg Arg Ala  
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 Ala Val Asp Ser Trp Arg Tyr Arg Ile Val Trp Arg Pro Val Ala Thr  
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 Pro Ser Tyr Asp Arg Val Leu Ser Gly Arg Trp Ala Val Val Val Pro  
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 Ala Gly His Glu Asp Asp Pro Val Val Asp Trp Val Cys Ser Ala Leu  
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 Arg Asp His Gly Gly Glu Pro Glu Arg Met Val Leu Gly Pro Arg Glu  
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 1075 1080 1085  
 Val Ser Ala Thr Ala Thr Asp Pro Val Ala Pro Thr His Ala Ala Gln  
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 Arg Phe Ala Ala Val Leu Ser Ala Gly Glu Asp Glu Asp Gln Leu Ala  
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 Ser Ala Leu Leu Asp Arg Val Gln Glu Asp Gly Pro Pro Ile Arg Thr



1250	1255	1260
Val Val His Ala Ala Gly Ser Gly Arg Ala Ala Arg Leu Leu Asp Thr 1265	1270	1275 1280
Asp Ala Glu Glu Thr Ala Ala Val Leu Arg Ala Lys Ser Ala Gly Ala 1285	1290	1295
Arg Asn Leu His Glu Leu Leu Asp Asp Val Asp Ala Phe Val Leu Phe 1300	1305	1310
Ser Ser Gly Ala Gly Val Trp Gly Ser Ser Ala Gln Gly Ala Tyr Ala 1315	1320	1325
Ala Ala Asn Ala Tyr Leu Asp Ala Leu Ala Glu Gln Arg Arg Gly Gln 1330	1335	1340
Gly Arg Pro Ala Thr Ser Val Ala Trp Gly Ala Trp Ala Gly Asp Gly 1345	1350	1355 1360
Met Thr Ala Ala Ala Gly Glu Glu Trp Trp Ser Arg Gln Gly Leu Arg 1365	1370	1375
Phe Met Ala Pro Glu Ala Ala Leu Asp Ala Leu Arg Gln Ala Val Asp 1380	1385	1390
Arg Ala Glu Ser Thr Leu Val Val Ala Asp Ile Asp Trp Lys Thr Phe 1395	1400	1405
Ala Pro Leu Phe Thr Ser Ala Arg Ser Arg Pro Leu Ile Thr Asp Ile 1410	1415	1420
Pro Glu Ala Arg Pro Glu Pro Arg Pro Glu Gly Ala Asp Gln Pro Thr 1425	1430	1435 1440
Gln Gly Leu Val Ala Lys Leu Ala Val Leu Ser Ala Asp Glu Arg Arg 1445	1450	1455
Arg Ala Leu Leu Ala Glu Val Arg Ala Gln Ala Ala Val Val Leu Gly 1460	1465	1470
His Pro Gly Ala Asp Ala Val Pro Val Asp Arg Pro Phe Arg Glu Leu 1475	1480	1485
Gly Phe Asp Ser Leu Ser Ala Val Lys Leu Arg Asn Arg Ile Val Ala 1490	1495	1500
Ala Thr Gly Leu Glu Leu Pro Ala Thr Leu Val Phe Asp His Pro Thr 1505	1510	1515 1520
Ser Thr Ala Leu Ala Ala Tyr Leu Gly Ala Arg Leu Gly Ile Asp Gly 1525	1530	1535
Ala Pro Ala Gly Ser Thr Leu Leu Glu Asp Leu Ala Arg Leu Glu Ser 1540	1545	1550
Thr Val Ala Thr Leu Thr Ala Ala Pro Leu Ala Glu Thr Val Pro Asp 1555	1560	1565
Ala Arg Asp Arg Ala Ala Leu Thr Thr Arg Leu Arg Ala Leu Leu Glu 1570	1575	1580
Arg Trp Asp Gln Ala Asp Gly Glu Asp Gln Ala Ala Ala Arg Glu Glu 1585	1590	1595 1600

Leu Asp Asp Leu Ser Asp Asp Asp Leu Phe Asp Phe Ile Asp Ala Lys  
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Phe Gly Arg Ser  
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 Val Arg Ser Pro Glu Glu Phe Trp Asn Leu Leu Asp Glu Gly Val Asp  
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 Ala Val Ala Gly Phe Pro Glu Asp Arg Gly Trp Asp Leu Glu Asn Leu  
 65 70 75 80  
 Tyr Asp Pro Asp Pro Asp Glu Pro Gly Lys Cys Tyr Ala Arg Glu Gly  
 85 90 95  
 Gly Phe Leu Tyr Asp Ala Gly Glu Phe Asp Ala Ala Phe Phe Gly Ile  
 100 105 110  
 Ser Pro Arg Glu Ala Leu Ser Met Asp Pro Gln Gln Arg Leu Leu Leu  
 115 120 125  
 Glu Cys Ser Trp Ser Ala Leu Glu Arg Ala Gly Ile Asp Pro Gly Ser  
 130 135 140  
 Leu Arg Gly Lys Asp Val Gly Val Tyr Val Gly Ala Trp Asn Ser Asn  
 145 150 155 160  
 Tyr Gly Arg Gly Gly Gly Ala Glu Ser Ser Glu Gly His Leu Leu Thr  
 165 170 175  
 Gly Asn Ala Ser Ser Val Val Ser Gly Arg Val Ala Tyr Val Leu Gly  
 180 185 190  
 Leu Glu Gly Pro Ala Val Thr Ile Asp Thr Ala Cys Ser Ser Ser Leu  
 195 200 205  
 Val Gly Leu His Leu Ala Ala Gln Ala Leu Arg Ser Gly Glu Cys Gly  
 210 215 220  
 Leu Ala Leu Ala Gly Gly Val Thr Val Met Ser Thr Pro Leu Ser Leu  
 225 230 235 240  
 Val Ser Phe Ser Arg Gln Arg Gly Leu Ala Gln Asp Gly Arg Ser Lys  
 245 250 255  
 Ala Phe Ser Ala Asp Ala Asp Gly Met Gly Met Ala Glu Gly Val Gly  
 260 265 270

Val Leu Val Leu Glu Arg Leu Ser Glu Ala Arg Arg Asn Gly His Glu  
 275 280 285  
 Val Leu Ala Val Leu Arg Ser Ser Ala Val Asn Gln Asp Gly Ala Ser  
 290 295 300  
 Asn Gly Leu Ser Ala Pro Asn Gly Pro Ala Gln Gln Arg Val Ile Gln  
 305 310 315 320  
 Ser Ala Leu Thr Val Gly Arg Leu Ala Pro Ser Asp Ile Asp Val Val  
 325 330 335  
 Glu Ala His Gly Thr Gly Thr Ala Leu Gly Asp Pro Ile Glu Ala Gln  
 340 345 350  
 Ala Leu Leu Ala Thr Tyr Gly Arg Gly Arg Asp Ala Asp Arg Pro Leu  
 355 360 365  
 Trp Leu Gly Ser Val Lys Ser Asn Ile Gly His Thr Gln Ala Ala Ala  
 370 375 380  
 Gly Val Ala Gly Val Ile Lys Met Val Leu Ala Leu Arg Lys Gly Val  
 385 390 395 400  
 Leu Pro Arg Thr Leu His Val Asp Glu Pro Thr Gly Glu Val Asp Trp  
 405 410 415  
 Asp Ser Gly Ala Val Arg Leu Leu Thr Glu Ala Arg Glu Trp Pro Ser  
 420 425 430  
 Gly Glu Gly Arg Val Arg Arg Ala Gly Val Ser Ser Phe Gly Ile Ser  
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 Gly Thr Asn Ala His Val Ile Val Glu Glu Ala Pro Glu Glu Glu Pro  
 450 455 460  
 Arg Pro Glu Ala Pro Ser Val Asp Val Val Pro Trp Val Leu Ser Ala  
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 Arg Ser Ala Glu Ala Leu Arg Glu Gln Ala Ala Arg Leu Ala Ser Val  
 485 490 495  
 Ala Gly Gly Leu Asn Val Val Asp Val Gly Trp Ser Leu Ala Ser Thr  
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 Arg Ala Ala Phe Glu His Arg Ala Val Val Val Gly Arg Asp Ser Glu  
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 Glu Leu Val Ser Gly Leu Ser Ser Val Ser Gly Val Glu Val Gly Val  
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 Cys Gln Trp Val Gly Met Gly Arg Glu Leu Leu Gly Ser Ser Leu Val  
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 580 585 590  
 Asp Phe Ser Val Val Asp Val Leu Gly Ser Ala Gly Glu Leu Gly Arg  
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 Val Glu Val Val Gln Pro Ala Leu Trp Ala Val Met Val Ser Leu Ala

610

615

620

Arg	Val	Trp	Arg	Ser	Trp	Gly	Val	Pro	Val	Ala	Ala	Val	Val	Gly	His
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Ser	Gln	Gly	Glu	Ile	Ala	Ala	Ala	Thr	Val	Ala	Gly	Ala	Leu	Ser	Val
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Gly	Asp	Ala	Ala	Arg	Val	Val	Ala	Leu	Arg	Ser	Arg	Leu	Ile	Ala	Glu
			660					665					670		
Arg	Leu	Ser	Gly	Leu	Gly	Gly	Met	Val	Ser	Val	Ala	Leu	Ser	Arg	Glu
		675					680					685			
Arg	Val	Val	Ser	Leu	Ile	Ala	Gly	Val	Pro	Gly	Val	Ser	Val	Ala	Ala
	690					695					700				
Val	Asn	Gly	Ser	Ser	Ser	Thr	Val	Val	Ser	Gly	Glu	Ala	Ala	Gly	Leu
705					710					715					720
Glu	Arg	Val	Leu	Ala	Ala	Cys	Val	Ser	Ser	Gly	Val	Arg	Ala	Arg	Arg
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Ile	Asp	Val	Asp	Tyr	Ala	Ser	His	Ser	Val	Gln	Val	Glu	Leu	Ile	Arg
			740					745					750		
Glu	Glu	Leu	Leu	Gly	Val	Leu	Asp	Gly	Ile	Val	Pro	Arg	Ser	Gly	Glu
		755					760					765			
Ile	Pro	Phe	Val	Ser	Thr	Val	Thr	Gly	Glu	Arg	Ile	Asp	Thr	Val	Glu
	770					775					780				
Leu	Gly	Ala	Glu	Tyr	Trp	Tyr	Arg	Asn	Leu	Arg	Gln	Thr	Val	Glu	Phe
785					790					795					800
Gln	Ala	Ser	Val	Gln	Thr	Leu	Leu	Ala	Gln	Gly	His	Gln	Val	Phe	Leu
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Glu	Ser	Ser	Pro	His	Pro	Val	Leu	Thr	Val	Gly	Ile	Glu	Glu	Thr	Val
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His	Glu	Ser	Ala	Ala	Gln	Ala	Val	Val	Leu	Gly	Ser	Leu	Arg	Arg	Asp
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Glu	Gly	Ala	Leu	Thr	Arg	Leu	Val	Thr	Ser	Ala	Gly	Glu	Ala	Trp	Ala
	850					855					860				
Arg	Gly	Val	Pro	Val	Asp	Trp	Ala	Gly	Met	Leu	Ala	Gly	Gly	Arg	Arg
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Val	Glu	Leu	Pro	Thr	Tyr	Pro	Phe	Leu	Arg	Glu	Arg	Leu	Trp	Leu	Glu
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Pro	Ser	Arg	Ser	Arg	Thr	Gly	Asn	Leu	Asn	Met	Ala	Gly	Leu	Val	Glu
			900					905					910		
Ala	Gly	His	Glu	Ile	Leu	Pro	Ala	Ala	Val	Glu	Leu	Pro	Gly	Glu	Gln
		915					920					925			
Trp	Val	Trp	Thr	Gly	Glu	Leu	Ser	Leu	Ser	Ala	Tyr	Pro	Trp	Leu	Ala
	930					935					940				
Asp	His	Gln	Val	Leu	Gly	Gln	Thr	Leu	Val	Pro	Gly	Val	Ala	Trp	Val
945					950					955					960

Glu Leu Ala Leu His Ala Gly His Gln Leu Gly Phe Gly Ser Val Glu  
 965 970 975  
 Glu Leu Thr Leu Gln Ala Pro Leu Val Leu Gly Glu Ser Asp Ala Val  
 980 985 990  
 Gln Val Arg Val Val Val Ser Asp Leu Gly Glu Ser Asp Arg Arg Ala  
 995 1000 1005  
 Val Ser Val His Ser Arg Gly Asp Asp Gln Thr Trp Val Thr His Ala  
 1010 1015 1020  
 Glu Gly Phe Leu Thr Ala Lys Gly Ala Gln Pro Glu Thr Met Ala Val  
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 Trp Pro Pro Ser Gly Ala Glu Pro Val Glu Ala Asp Gly Phe Tyr Glu  
 1045 1050 1055  
 Arg Leu Ala Asp Ala Gly Tyr His Tyr Gly Pro Val Phe Gln Gly Val  
 1060 1065 1070  
 Ser Lys Val Trp Arg Ala Gly Glu Glu Ile Tyr Ala Glu Val Gly Leu  
 1075 1080 1085  
 Leu Asp Asp Ala Asp Val Asp Gly Phe Gly Ile His Pro Ala Leu Leu  
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 Asp Ala Ala Leu Gln Thr Ala Tyr Val Ala Gln Arg Gly Pro Ala Glu  
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 Thr Lys Leu Pro Phe Ala Phe Gly Asp Val Gln Leu Phe Ala Thr Gly  
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 Ala Trp Glu Ala Trp Asp Pro Thr Gly Leu Pro Val Phe Ser Leu Gly  
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 Ala Leu Gly Ala Ala Leu Arg Ala Ala Gly Trp Glu Val Gly Ala Ala  
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 Pro Glu Pro Ala Ser Ala Asp Thr Ala Ala Glu Val Leu Leu Leu Pro  
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 Cys Thr Ala Pro Gly Glu Pro Asp Ala Asp Leu Pro Thr Ala Val Arg  
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 Ala Val Thr Ala Arg Val Leu Gly Val Leu Gln Glu Trp Leu Ala Asp  
 1265 1270 1275 1280  
 Glu Arg Leu Ala Gly Thr Arg Leu Ala Val Val Thr Arg Asn Ala Leu  
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Pro Gly Asp Leu Leu His Ser Pro Val Trp Gly Leu Val Arg Ser Ala  
 1300 1305 1310

Gln Thr Glu Asn Pro Gly Arg Ile Thr Leu Val Asp Leu Asp Asp His  
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Pro Asp Ser Ala Ala Val Leu Ala Glu Ala Val Gln Ser Asp Glu Pro  
 1330 1335 1340

Arg Ile Met Val Arg Glu Gly Arg Pro Thr Ala Ala Arg Leu Val Arg  
 1345 1350 1355 1360

Ala Thr Ala Pro Glu Leu Val Pro Pro Ala Gly Ala Asp Ala Trp Arg  
 1365 1370 1375

Leu Glu Ile Thr Glu Pro Gly Thr Phe Asp Asn Leu Thr Leu Gly Val  
 1380 1385 1390

Tyr Pro His Ala Glu Lys Thr Leu Ala Asp Asn Glu Val Arg Val Ala  
 1395 1400 1405

Val His Ala Gly Gly Leu Asn Phe His Asp Val Val Ala Ala Leu Gly  
 1410 1415 1420

Met Val Glu Asp Asp Leu Thr Leu Gly Arg Glu Ala Ala Gly Val Val  
 1425 1430 1435 1440

Val Glu Val Gly Asp Ala Val Pro Asp Leu Thr Pro Gly Asp His Val  
 1445 1450 1455

Met Gly Ile Leu Ser Ser Gly Phe Gly Pro Leu Ala Val Thr Asp His  
 1460 1465 1470

Arg Tyr Leu Ala Arg Met Pro Glu Gly Trp Thr Phe Ala Gln Ala Ala  
 1475 1480 1485

Ser Val Pro Ala Ala Phe Leu Thr Ala Tyr Tyr Gly Leu Cys Asp Leu  
 1490 1495 1500

Gly Gly Ile Arg Ala Gly Asp Arg Val Leu Ile His Ala Ala Ala Gly  
 1505 1510 1515 1520

Gly Val Gly Met Ala Ala Val Gln Ile Ala Arg His Leu Gly Ala Glu  
 1525 1530 1535

Val Phe Gly Thr Ala Ser Pro Arg Lys Trp Gly Ala Leu Arg Ala Leu  
 1540 1545 1550

Gly Leu Asp Asp Ala His Leu Ser Ser Ser Arg Thr Leu Asp Phe Glu  
 1555 1560 1565

Gln Glu Phe Leu Asp Ala Thr Asp Gly Arg Gly Val Asp Leu Val Leu  
 1570 1575 1580

Asn Ser Leu Ala Arg Glu Phe Val Asp Ala Ser Leu Arg Leu Met Pro  
 1585 1590 1595 1600

Gly Gly Gly Arg Phe Val Asp Met Gly Lys Thr Asp Ile Arg Arg Pro  
 1605 1610 1615

Glu Gln Val Ala Glu Asp His Gly Gly Val Ala Tyr Gln Ala Phe Asp  
 1620 1625 1630

Leu Val Glu Ala Gly Pro Gln Arg Thr Gly Glu Met Leu Ala Glu Ile

1635	1640	1645
Val Arg Leu Phe Gln Ala Gly Ala Phe Arg Pro Leu Pro Ile Thr Gln 1650	1655	1660
Trp Asp Val Arg Arg Ala Pro Glu Ala Phe Arg His Ile Ser Gln Ala 1665	1670	1675 1680
Lys His Ile Gly Lys Ile Val Leu Thr Val Pro Arg Pro Ile Asp Thr 1685	1690	1695
Asp Gly Thr Val Met Val Thr Gly Ala Thr Gly Thr Leu Gly Gly Phe 1700	1705	1710
Val Ala Arg His Leu Val Thr His His Gly Ile Arg Arg Leu Leu Leu 1715	1720	1725
Val Ser Arg Ser Ala Glu Arg Thr Asp Leu Val Arg Glu Leu Thr Glu 1730	1735	1740
Leu Gly Ala Asp Val Thr Trp Ala Ser Cys Asp Leu Ala Asp Ala Thr 1745	1750	1755 1760
Ala Val Glu Glu Thr Val Arg Ser Val Asp Glu Arg His Pro Leu Val 1765	1770	1775
Ala Val Val His Ser Ala Gly Val Leu Asp Asp Gly Val Ile Asp Lys 1780	1785	1790
Gln Ser Pro Glu Arg Leu Asp Thr Val Met Arg Pro Lys Val Asp Ala 1795	1800	1805
Ala Trp Asn Leu His Arg Leu Leu Asp Asn Ala Pro Leu Ala Asp Phe 1810	1815	1820
Val Leu Phe Ser Ser Ala Ser Gly Val Leu Gly Gly Ala Gly Gln Ser 1825	1830	1835 1840
Asn Tyr Ala Ala Ala Asn Ala Phe Leu Asp Ala Leu Ala Glu His Arg 1845	1850	1855
Arg Ala Gln Gly Leu Ala Gly Gln Ala Leu Ala Trp Gly Leu Trp Ser 1860	1865	1870
Asp Arg Ser Thr Met Thr Gly Gln Leu Gly Ser Thr Glu Leu Ala Arg 1875	1880	1885
Ile Ala Arg Asn Gly Val Ala Glu Met Ser Glu Thr Glu Gly Leu Ala 1890	1895	1900
Leu Phe Asp Ala Ala Arg Asp Thr Ala Glu Ala Val Leu Leu Pro Met 1905	1910	1915 1920
His Leu Asp Val Ala Arg Leu Arg Ser Arg Asn Gly Glu Val Pro Ala 1925	1930	1935
Val Phe Arg Arg Leu Ile His Ala Thr Ala Arg Arg Thr Ala Ser Thr 1940	1945	1950
Ala Val Arg Ser Ala Gly Leu Glu Gln Gln Leu Ala Ser Leu Ser Gly 1955	1960	1965
Pro Glu Arg Thr Glu Leu Leu Leu Gly Leu Val Arg Asp His Ala Ala 1970	1975	1980

Ala Val Leu Gly His Gly Thr Ser Asp Ala Val Ser Pro Asp Arg Pro  
1985 1990 1995 2000

Phe Arg Asp Leu Gly Phe Asp Ser Leu Thr Ala Val Glu Leu Arg Asn  
2005 2010 2015

Arg Phe Ala Ala Leu Thr Gly Leu Arg Leu Pro Ala Thr Leu Val Phe  
2020 2025 2030

Asp His Pro Ser Pro Thr Ala Leu Ala Gly His Leu Ala Gly Leu Leu  
2035 2040 2045

Gly Ala Ala Thr Pro Ser Ala Ala Glu Pro Val Leu Ala Ala Val Gly  
2050 2055 2060

Arg Leu Arg Ala Asp Leu Arg Ser Leu Thr Pro Asp Ala Glu Gly Ala  
2065 2070 2075 2080

Glu Asp Val Thr Ile Gln Leu Glu Ala Leu Leu Ala Glu Trp Arg Glu  
2085 2090 2095

Ala Ala Glu Lys Arg Ala Pro Glu Ala Val Gly Asp Glu Asp Leu Ser  
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Thr Ala Thr Asp Asp Glu Ile Phe Ala Leu Val Asp Ser Glu Leu Gly  
2115 2120 2125

Glu Ala  
2130

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<212> PRT  
<213> Streptomyces parvulus Tü4055

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Thr Leu Ala Asp Leu Arg Thr Thr Lys Gln Arg Leu Arg Asp Thr Glu  
20 25 30

Arg Arg Ala Thr Glu Pro Val Ala Ile Val Gly Met Ser Cys Arg Leu  
35 40 45

Pro Gly Asp Val Arg Thr Pro Glu Arg Phe Trp Glu Leu Leu Asp Thr  
50 55 60

Gly Thr Asp Ala Leu Thr Pro Leu Pro Thr Asp Arg Gly Trp Asn Leu  
65 70 75 80

Asp Thr Ala Phe Asp Asp Glu Arg Pro Tyr Arg Arg Glu Gly Gly Phe  
85 90 95

Leu Tyr Asp Ala Gly Arg Phe Asp Ala Glu Phe Phe Gly Ile Ser Pro  
100 105 110

Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Leu Leu Glu Ser  
115 120 125

Ser Trp Glu Ala Ile Glu His Ala Arg Ile Asp Pro Arg Ser Leu His  
130 135 140

Gly Ser Arg Thr Gly Val Trp Phe Gly Thr Ile Gly Gln Asp Tyr Phe  
 145 150 155 160  
 Ser Leu Phe Ala Ala Ser Gly Gly Glu His Ala Asn Tyr Leu Ala Thr  
 165 170 175  
 Ala Cys Ser Ala Ser Val Met Ser Gly Arg Val Ser Tyr Val Leu Gly  
 180 185 190  
 Leu Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu  
 195 200 205  
 Val Ala Leu His Ser Ala Val Gln Ala Leu Arg Ser Gly Glu Cys Glu  
 210 215 220  
 Leu Ala Leu Ala Gly Gly Ala Thr Val Met Ala Thr Pro Thr Val Phe  
 225 230 235 240  
 Thr Ala Phe Ser His Gln Arg Gly Leu Ala Gly Asp Gly Arg Cys Lys  
 245 250 255  
 Ala Phe Ala Ala Gly Ala Asp Gly Ala Gly Phe Ala Glu Gly Val Gly  
 260 265 270  
 Val Leu Val Leu Glu Arg Leu Ser Val Ala Arg Arg Asn Gly His Arg  
 275 280 285  
 Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser  
 290 295 300  
 Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val Ile Arg  
 305 310 315 320  
 Ala Ala Leu Ala Asn Ala Arg Leu Ala Pro Glu Asp Val Asp Ala Val  
 325 330 335  
 Glu Gly His Gly Thr Gly Thr Ser Leu Gly Asp Pro Ile Glu Ala Gln  
 340 345 350  
 Ala Leu Leu Ala Thr Tyr Gly Arg Gly Arg Asp Ala Glu Arg Pro Leu  
 355 360 365  
 Trp Leu Gly Ser Val Lys Ser Asn Ile Gly His Ala Gln Ala Ala Ala  
 370 375 380  
 Gly Val Ala Gly Val Ile Lys Met Val Leu Ala Met Glu Lys Gly Arg  
 385 390 395 400  
 Leu Pro Arg Thr Leu His Val Asp Glu Pro Ser Gly Glu Val Asp Trp  
 405 410 415  
 Asp Ser Gly Ala Val Arg Leu Leu Thr Glu Ala Arg Asp Trp Pro Ser  
 420 425 430  
 Gly Glu Gly Arg Val Arg Arg Ala Gly Val Ser Ser Phe Gly Ile Ser  
 435 440 445  
 Gly Thr Asn Ala His Val Ile Ile Glu Glu Pro Gln Glu Glu Glu Ala  
 450 455 460  
 Ala Pro Asp Ser Ser Ala Ser Gly Ala Val Pro Trp Val Leu Ser Ala  
 465 470 475 480  
 Arg Ser Ala Glu Ala Leu Gln Ala Leu Ala Ser Gln Leu Ala Asp His

485

490

495

Ser Ala Lys Ser Ser Pro Val Asp Val Gly Trp Ser Leu Val Ser Thr  
 500 505 510  
 Arg Ala Ala Phe Glu His Arg Ala Val Val Val Gly Arg Gly Arg Asp  
 515 520 525  
 Glu Leu Val Arg Gly Leu Ser Glu Val Ala Gln Gly Arg Gly Val Arg  
 530 535 540  
 Gly Val Ala Ser Ser Ala Ser Gly Gly Leu Ala Phe Val Phe Ala Gly  
 545 550 555 560  
 Gln Gly Ser Gln Arg Leu Gly Met Gly Arg Gly Leu Tyr Glu Arg Phe  
 565 570 575  
 Pro Val Phe Ala Glu Ala Phe Asp Glu Val Cys Gly Arg Val Gly Pro  
 580 585 590  
 Gly Val Arg Glu Val Val Phe Gly Ser Asp Ala Gly Glu Leu Asp Arg  
 595 600 605  
 Thr Val Trp Ala Gln Ala Gly Leu Phe Ala Leu Glu Val Ala Leu Phe  
 610 615 620  
 Arg Leu Leu Glu Ser Trp Gly Val Arg Pro Gly Cys Leu Ile Gly His  
 625 630 635 640  
 Ser Val Gly Glu Leu Ser Ala Ala Cys Val Ala Gly Leu Trp Ser Leu  
 645 650 655  
 Glu Asp Ala Cys Arg Val Val Ala Ala Arg Ala Arg Leu Met Gln Ala  
 660 665 670  
 Leu Pro Ala Gly Gly Val Met Val Ala Val Arg Ala Glu Ala Gly Glu  
 675 680 685  
 Leu Ala Gly Phe Leu Gly Glu Asp Val Val Ile Ala Ser Val Asn Ala  
 690 695 700  
 Pro Gly Gln Val Val Ile Ala Gly Pro Glu Gly Gly Val Glu Arg Val  
 705 710 715 720  
 Val Ala Ala Cys Gly Ala Arg Ser Arg Arg Leu Ala Val Ser His Ala  
 725 730 735  
 Phe His Ser Pro Leu Val Glu Pro Met Leu Gly Glu Phe Arg Arg Val  
 740 745 750  
 Val Glu Ser Val Ala Phe Gly Val Pro Ser Leu Arg Val Val Ser Asn  
 755 760 765  
 Val Thr Gly Ala Trp Val Asp Pro Glu Glu Trp Gly Thr Pro Glu Tyr  
 770 775 780  
 Trp Val Arg Gln Val Arg Glu Pro Val Arg Phe Ala Asp Gly Val Ala  
 785 790 795 800  
 Thr Leu Leu Asp Ala Gly Val Arg Thr Phe Val Glu Leu Gly Pro Ala  
 805 810 815  
 Gly Thr Leu Thr Ser Met Val Ser His Cys Ala Asp Ala Thr Ala Thr  
 820 825 830



Ser Val Thr Ala Val Pro Thr Leu Arg Pro Asp His Asp Glu Ser Arg  
 835 840 845  
 Thr Val Leu Ser Ala Ala Ala Ser Leu Tyr Val Gln Gly His Pro Val  
 850 855 860  
 Asp Trp Ala Pro Leu Phe Pro Arg Ala Arg Thr Val Asp Leu Pro Thr  
 865 870 875 880  
 Tyr Pro Phe Gln His Gln His Tyr Trp Met Glu Ser Ala Ala Arg Pro  
 885 890 895  
 Thr Val Glu Asp Thr Pro Arg Glu Pro Leu Asp Gly Trp Thr His Arg  
 900 905 910  
 Ile Asp Trp Val Pro Leu Val Asp Glu Glu Pro Ala Pro Val Leu Ala  
 915 920 925  
 Gly Thr Trp Leu Leu Val Arg Pro Glu Glu Gly Pro Arg Pro Leu Ala  
 930 935 940  
 Asp Ala Val Ala Asp Ala Leu Thr Arg His Gly Ala Ser Val Val Glu  
 945 950 955 960  
 Ala Ala Arg Val Pro His Gln Ser Asp Thr Glu Leu Thr Gly Val Val  
 965 970 975  
 Ser Leu Leu Gly Pro Gly Ala Asp Gly Asp Gly Gly Leu Asp Ala Thr  
 980 985 990  
 Leu Arg Leu Val Gln Asp Leu Ala Thr Ala Gly Ser Thr Ala Pro Leu  
 995 1000 1005  
 Trp Ile Val Thr Ser Gly Ala Val Ala Val Gly Thr Ser Asp Thr Val  
 1010 1015 1020  
 Pro Asn Pro Glu Gln Ala Thr Leu Trp Gly Leu Ala Arg Ala Ala Ala  
 1025 1030 1035 1040  
 Thr Glu Trp Pro Gly Leu Gly Ala Ala Arg Ile Asp Leu Pro Ala Asp  
 1045 1050 1055  
 Leu Thr Glu Gln Val Gly Arg Arg Leu Cys Ala Arg Leu Leu Asp Arg  
 1060 1065 1070  
 Ser Glu Gln Glu Thr Ala Val Arg Gln Ala Gly Val Phe Ala Arg Arg  
 1075 1080 1085  
 Leu Val Arg Ala Arg Thr Ser Asp Gly Arg Trp Thr Pro Arg Gly Thr  
 1090 1095 1100  
 Val Leu Val Thr Gly Gly Thr Gly Ala Leu Ala Gly His Val Ala Arg  
 1105 1110 1115 1120  
 Trp Leu Ala Glu Glu Gly Ala Glu His Ile Val Leu Ala Gly Arg Arg  
 1125 1130 1135  
 Gly Pro Asp Gly Gln Gly Ala Glu Ala Leu Arg Ala Asp Leu Val Ala  
 1140 1145 1150  
 Ala Gly Val Lys Ala Thr Ile Val Arg Cys Asp Val Ala Asp Arg Asp  
 1155 1160 1165

Ala Val Arg Leu Leu Leu Asp Ala His Arg Pro Ser Ala Ile Val His  
 1170 1175 1180

Thr Ala Gly Val Val Asp Asp Gly Leu Leu Thr Ser Leu Thr Pro Ala  
 1185 1190 1195 1200

Gln Val Glu Arg Val Leu Arg Pro Lys Leu Leu Gly Ala Arg Asn Leu  
 1205 1210 1215

His Glu Leu Thr Arg Asp Arg Glu Leu Asp Ala Phe Val Leu Phe Ser  
 1220 1225 1230

Ser Leu Ala Gly Val Leu Gly Gly Ala Gly Gln Ala Asn Tyr Ala Ala  
 1235 1240 1245

Ala Asn Ala Tyr Leu Asp Ala Leu Ala Ala His Arg Thr Ala His Gly  
 1250 1255 1260

Leu Pro Ala Ala Ser Leu Ala Trp Gly Pro Trp Glu Gly Asp Gly Met  
 1265 1270 1275 1280

Ala Ala Ala Gln Glu Ala Ala Asp Arg Leu Arg Arg Ser Gly Leu Thr  
 1285 1290 1295

Pro Leu Pro Pro Glu Gln Ala Val Arg Ala Leu Gly Arg Gly His Gly  
 1300 1305 1310

Pro Leu Val Val Ala Asp Ala Asp Trp Ala Arg Leu Ala Ala Gly Ser  
 1315 1320 1325

Thr Gln Arg Leu Leu Asp Glu Leu Pro Glu Val Arg Ala Val Arg Pro  
 1330 1335 1340

Ala Glu Pro Ala Val Gly Gln Arg Pro Asp Leu Pro Ala Arg Leu Ala  
 1345 1350 1355 1360

Gly Arg Pro Ala Glu Glu Gln Ser Ala Val Leu Leu Glu Ala Val Arg  
 1365 1370 1375

Glu Glu Ile Ala Ala Val Leu Arg Tyr Ala Asp Pro Ala Arg Ile Gly  
 1380 1385 1390

Ala Asp His Glu Phe Leu Ala Leu Gly Phe Asp Ser Leu Thr Ser Ile  
 1395 1400 1405

Glu Leu Arg Asn Arg Leu Ala Thr Arg Ile Gly Leu Thr Leu Pro Ala  
 1410 1415 1420

Thr Leu Thr Leu Glu Gln Arg Thr Pro Ala Gly Leu Ala Ala His Leu  
 1425 1430 1435 1440

Arg Glu Arg Ile Ala Asp Arg Pro Val Gly Ser Gly Ala Val Pro Val  
 1445 1450 1455

Pro Gly Ser Ala Asp Val Pro Glu Ala Gly Gly Gly Ser Gly Leu Gly  
 1460 1465 1470

Glu Leu Trp Gln Glu Ala Asp Arg His Gly Arg Arg Leu Glu Phe Ile  
 1475 1480 1485

Asp Val Leu Thr Ala Ala Ala Ala Phe Arg Pro Ala Tyr Arg Glu Pro  
 1490 1495 1500

Ala Glu Leu Glu Leu Pro Pro Leu Arg Leu Thr Ser Gly Gly Asp Glu

1505                      1510                      1515                      1520  
 Pro Pro Leu Phe Cys Ile Pro Ser His Leu Gly Lys Ala Asp Pro His  
                          1525                      1530                      1535  
 Lys Phe Leu Arg Phe Ala Ala Ala Leu Arg Gly Arg Arg Asp Val Phe  
                          1540                      1545                      1550  
 Val Leu Arg Gln Pro Gly Phe Val Pro Gly Gln Pro Leu Pro Ala Gly  
                          1555                      1560                      1565  
 Leu Asp Val Leu Leu Asp Thr His Ala Arg Ala Met Ala Gly His Asp  
                          1570                      1575                      1580  
 Arg Pro Val Leu Leu Gly Tyr Ser Ala Gly Gly Leu Ala Ala Gln Ala  
                          1585                      1590                      1595                      1600  
 Leu Ala Ala Arg Leu Ala Glu Leu Gly Arg Pro Pro Ala Ala Val Val  
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 Leu Val Asp Thr Tyr Ala Pro Asp Glu Thr Glu Val Met Ala Arg Ile  
                          1620                      1625                      1630  
 Gln Gly Ala Met Glu Gln Gly Gln Arg Asp Arg Asp Gly Arg Thr Gly  
                          1635                      1640                      1645  
 Ala Ala Phe Gly Glu Ala Trp Leu Thr Ala Met Gly His Tyr Phe Gly  
                          1650                      1655                      1660  
 Phe Asp Trp Thr Pro Cys Pro Val Asp Val Pro Val Leu His Val Arg  
                          1665                      1670                      1675                      1680  
 Ala Gly Asp Pro Met Thr Gly Met Pro Val Glu Gly Arg Trp Gln Ala  
                          1685                      1690                      1695  
 Arg Trp Asn Leu Pro His Thr Ala Val Asp Val Pro Gly Asp His Phe  
                          1700                      1705                      1710  
 Thr Met Met Glu Asp His Ala Pro Arg Thr Ala Asp Thr Val His Asp  
                          1715                      1720                      1725  
 Trp Leu Gly Thr Ala Val Arg Arg Pro Glu Arg Thr Arg Asp  
                          1730                      1735                      1740  
  
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 Pro Ala His Pro Thr Ala Pro Gln Leu Ile Cys Leu Pro His Ala Gly  
                          20                      25                      30  
 Gly Ser Ala Thr Phe Tyr His Pro Val Ala Ala Ala Leu Ala Pro Arg  
                          35                      40                      45  
 Cys Asp Val Leu Ala Val Gln Tyr Pro Gly Arg Gln Asp Arg Arg Ala  
                          50                      55                      60  
 Glu Lys Pro Leu Glu Asp Ile Asp Glu Leu Ala Asn Gln Leu Phe Pro  
                          65                      70                      75                      80

Val Leu Arg Ala Arg Val His Gln Pro Val Ala Leu Phe Gly His Ser  
                             85                            90                            95  
 Met Gly Ala Thr Leu Ala Phe Glu Leu Ala Arg Arg Phe Glu Ser Ala  
                             100                            105                            110  
 Gly Ile Ser Leu Glu Ala Leu Leu Val Ser Ala Arg Pro Ala Pro Ser  
                             115                            120                            125  
 Arg Gln Arg Thr Gly Gly Thr Val His Leu Leu Ser Asp Glu Glu Leu  
                             130                            135                            140  
 Val Ala Glu Leu Arg Thr Leu Asp Gly Thr Ala Glu Gln Val Phe His  
                             145                            150                            155                            160  
 Asp Glu Glu Leu Val Arg Met Ala Leu Pro Ala Ile Arg Gly Asp Tyr  
                             165                            170                            175  
 Arg Ala Ala Glu Thr Tyr Arg Tyr Arg Pro Gly Pro Lys Leu Arg Cys  
                             180                            185                            190  
 Pro Ile His Ala Leu Thr Gly Asp Asp Asp Pro Met Val Thr Pro Val  
                             195                            200                            205  
 Glu Ala Arg Ala Trp Ser Glu His Thr Asp Gly Pro Phe Thr Leu Asp  
                             210                            215                            220  
 Thr Phe Ala Gly Gly His Phe Tyr Leu Leu Glu His Arg Asp Ala Ile  
                             225                            230                            235                            240  
 Leu Gly Ile Ile Ala Glu His Leu Arg Thr Cys Ser Arg Ala Pro Gly  
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 Asp Arg Ser Gly Leu Thr Arg Glu  
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                             20                            25                            30  
 Arg Val Val Leu Val Gly Arg Thr Glu Ser Ala Leu Thr Glu Thr Thr  
                             35                            40                            45  
 Ala Gly Leu Pro Ser Ser His His Leu Val Val Pro Cys Asp Val Gly  
                             50                            55                            60  
 Asp Asp Lys Gln Val Ala Asp Cys Val Ala Arg Ala Val Ser Arg Phe  
   65                            70                            75                            80  
 Gly Arg Leu Asp Gly Ala Phe Asn Asn Ala Gly Thr Phe Gly Ser Phe  
                             85                            90                            95  
 Gly Pro Leu His Gln Asp Thr Ala Asp Asn Phe Asp Arg Val Ile Ala  
                             100                            105                            110

Thr Asn Leu Arg Gly Val Trp Ser Cys Met Arg Gly Gln Ile Glu Ala  
 115 120 125  
 Met Leu Thr Ala Gly Gly Gly Ala Ile Val Asn Cys Ala Ser Val Ala  
 130 135 140  
 Gly His Ile Gly His Ala Gln Ser Pro Leu Tyr Ser Ala Thr Lys His  
 145 150 155 160  
 Ala Val Ile Gly Leu Ser Lys Ser Val Ala Leu Gln Tyr Ala Gly Asp  
 165 170 175  
 Gly Ile Arg Val Asn Val Val Ser Pro Gly Ser Thr Asp Thr Pro Met  
 180 185 190  
 Leu Arg Ser Leu Tyr Ala Asp Pro Ser Ala Leu Ala Gln Arg Ala Arg  
 195 200 205  
 Arg Ala Pro Leu Gly Arg Leu Gly Lys Cys Glu Glu Val Ala Asn Ala  
 210 215 220  
 Val Val Trp Leu Leu Ser Pro Leu Ala Ala Tyr Val Thr Gly Gln Thr  
 225 230 235 240  
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 245 250 255  
 Asn Ala Thr Pro Glu Gly Gln His Arg  
 260 265

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 Ile Cys Ala Glu Val Ala Arg Gly Leu Ala Ala Arg Gly Leu Arg Val  
 20 25 30  
 Val Leu Leu Asp Lys Asp Ala Glu Ala Val His Arg Val Ala Asp Gly  
 35 40 45  
 Leu Gly Asp Arg Leu Ala Arg Asp Pro Leu Val Ala Asp Val Thr Asp  
 50 55 60  
 Pro His Ala Leu Ala Ser Ala Val Asp Ser Leu Ala Pro Gln His Arg  
 65 70 75 80  
 Pro Gly Val Leu Val Asn Gly Val Gly Gly Asp Thr Arg Ala Arg Ser  
 85 90 95  
 Val Thr Glu Leu Thr Glu Ala Asp Leu Gln Glu Ala Val Thr His Asn  
 100 105 110  
 Leu Ala Ser Val Phe Thr Met Thr Arg Leu Cys Val Pro Ala Met Val  
 115 120 125  
 Ala Ala Gly Trp Gly Arg Val Val Asn Leu Ala Ser Val Ala Gly Arg  
 130 135 140  
 Thr Tyr Thr Arg Phe Ser Asn Ala Ala Tyr Val Ala Ala Lys Ala Gly



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<211> 390
<212> PRT
<213> Streptomyces parvulus Tü4055
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Ala	Phe	Asp	His	Ala	Thr	Arg	Ser	Arg	Arg	Ser	Ala	Ala	Ser	Leu	Leu
			20					25					30		
Val	Glu	Ile	Glu	Leu	Ala	Gly	Thr	Arg	Gly	Trp	Gly	Glu	Gly	Ala	Pro
		35					40					45			
Arg	Asp	Tyr	Val	Thr	Gly	Glu	Thr	Leu	Asp	Gly	Ala	Val	Arg	Ala	Val
	50					55					60				
Gln	Ala	Cys	Asp	Pro	Gly	Glu	Leu	Ala	Glu	Arg	Ile	Glu	Trp	Arg	Asp
65					70					75					80
Phe	Glu	Ser	Ala	Val	Ala	Ser	Ile	Ala	Gln	Leu	Pro	Leu	Thr	Gly	Leu
				85					90					95	
Val	Asp	Gly	Ser	Ser	Ala	Ala	Ala	Ala	Val	Glu	Ile	Ala	Leu	Leu	Asp
			100					105					110		
Ala	Val	Cys	Arg	His	Phe	Ala	Arg	Pro	Leu	Ala	Asp	Val	Leu	Arg	Val
		115					120					125			
Leu	Ala	Pro	Pro	Ala	Arg	Ser	Arg	Arg	Asp	Gly	Pro	Thr	Ser	Val	Ser
	130					135					140				
Leu	Val	Ile	His	Leu	Ser	Arg	Asp	Val	Ala	Thr	Val	Leu	Asp	Ala	Leu
145					150					155					160
Thr	Pro	Arg	Ala	Leu	Ala	Ala	Leu	Arg	His	Val	Lys	Ile	Lys	Val	Ala
				165					170					175	
Asp	Pro	Ala	Gly	Ala	Val	Asp	Arg	Leu	Thr	Ala	Ala	Gln	Asp	Arg	Leu
			180					185					192		
Pro	Ala	Asp	Thr	Arg	Val	Ser	Leu	Asp	Val	Asn	Gly	Ala	Trp	Thr	Ala
		195					200					205			

Glu Glu Ala Glu Lys Val Ala Gly Glu Leu Asp Gly Val Gly Trp Val  
 210 215 220

Glu Glu Pro Leu Pro Pro Arg Ser Trp Pro Glu Leu Gly Arg Leu Arg  
 225 230 235 240

Arg Ala Thr Gly Leu Pro Val Met Leu Asp Glu Ser Cys Thr Gly Pro  
 245 250 255

Ala Asp Leu His Ala Ala Ala Thr Ser Gly Ala Ala Ser His Ile Asn  
 260 265 270

Val Arg Leu Ser Lys Cys Gly Gly Phe Leu Ala Ala Ala Arg Leu Ala  
 275 280 285

Leu Arg Ala Asp Glu Leu Gly Val Gly Cys Gln Leu Gly Val His Val  
 290 295 300

Ala Glu Val Gly Pro Leu Trp Ala Ala Gly Arg Thr Leu Ala Thr Ala  
 305 310 315 320

Trp Asp Leu Trp Gln Thr Val Glu Ala Gly Arg Ala Asp Glu Trp Phe  
 325 330 335

Pro Val Pro Leu Thr Thr Pro Ala Phe Thr Val Asp Arg Ser Leu His  
 340 345 350

Arg Val Glu Pro Leu Thr Gly Pro Gly Thr Gly Ile Glu Pro Thr Glu  
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Glu Leu Leu Arg His Thr Arg Cys Ala Ala Thr Trp Glu Ser Gly Gly  
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Gly Trp Arg Arg Asn Thr  
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<212> PRT

<213> Streptomyces parvulus T04055

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His Gly Ile Gln Ser His Ala Gly Trp Leu Phe Glu Thr Gly Pro Glu  
 35 40 45

Leu Asn Ala Arg Gly Ile Asp Val Tyr Ala Leu Asp Arg Arg Gly Ser  
 50 55 60

Gly Arg Ser Glu Gly Pro Arg Gly His Leu Pro Ser Ala Asp Leu Val  
 65 70 75 80

Leu Asp Asp Tyr Ala Arg Ala Leu Asp Ala Val Thr Ala Glu Val Gly  
 85 90 95

Gly Ala Gly Pro Val Ala Leu Gly Gln Ser Leu Gly Gly Ser Val Leu  
 100 105 110

Ala Ala Leu Trp Cys Thr Arg Asp Leu Pro Val Arg Arg Leu Val Leu  
 115 120 125

Cys Ala Pro Ala Leu Gly Gln Gln Arg Ala Arg His Thr Ala Asp Thr  
 130 135 140

Leu Ala Glu Arg Arg Ala Leu Thr Gly Ser Gly Leu Arg Pro Val Gly  
 145 150 155 160

Leu Ala Asp Gly Asp Tyr Thr Asp Leu Pro Arg Tyr Arg Glu Phe Leu  
 165 170 175

Thr Gly Asp His Leu Met Leu Arg Glu Val Thr Ser Ala Thr Gln Ala  
 180 185 190

Thr Leu Val His Leu Glu Asp His Tyr Ala Arg Gly Ala Pro Arg Thr  
 195 200 205

Arg Leu Pro Val Asp Leu Ala Leu Pro Thr His Asp Pro Ile Ile Asp  
 210 215 220

Leu Ser Ala Ala Arg Ala Met Leu Arg Arg Leu Thr Ser Ala Val His  
 225 230 235 240

Glu Glu Val Phe Ala Thr Asp Arg His Tyr Val Glu Phe Thr Ser Ala  
 245 250 255

Arg Thr Ala Tyr Trp Asp Trp Leu Ala Thr Arg Leu Lys Glu Glu Ala  
 260 265 270

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<211> 539

<212> PRT

<213> Streptomyces parvulus Tü4055

<400> 13

Met Lys Val Phe His Ala Leu Ala Asp Ala Leu Thr Ala His Gly Val  
 1 5 10 15

Asp Thr Val Phe Gly Leu Met Gly Asn Ala Asn Leu Leu Tyr Leu Pro  
 20 25 30

Ala Phe Ala Asp Ala Gly Gly Arg Phe Val Ala Val Ala His Glu Ala  
 35 40 45

Gly Ala Val Ala Met Ala Asp Gly Arg Ala Arg Met Cys Gly Gly Ile  
 50 55 60

Gly Val Ala Ser Val Thr His Gly Pro Ala Phe Thr Asn Ala Leu Thr  
 65 70 75 80

Pro Leu Val Glu Ala Ala Arg Ser His Ser Gln Val Leu Leu Ile Thr  
 85 90 95

Gly Asp Pro Pro Pro Val Pro Thr His Phe His His Phe Asp Ile Ala  
 100 105 110

Thr Val Ala Ala Ala Ala Gly Ala Gly Tyr Glu Arg Val His Arg Pro  
 115 120 125

Ala Ser Leu Val Ala Asp Leu Asn Arg Ala Val Gln Arg Ile Val Ala  
 130 135 140

Glu Arg Arg Pro Val Val Leu Asn Val Pro Ile Asp Leu Met Gln Ala

145		150		155		160									
Glu	Ala	Gly	Glu	Gln	Ala	Pro	Val	Thr	Leu	Pro	Val	Ala	Pro	Gly	Pro
			165						170					175	
Leu	Ala	Ala	Pro	Glu	Ala	Glu	Ala	Leu	Asp	Gly	Ala	Leu	Gly	Leu	Ile
			180					185					190		
Gly	Ser	Ala	Lys	Arg	Pro	Leu	Val	Leu	Ala	Gly	His	Gly	Ala	Ala	Val
		195					200					205			
Ala	Gly	Ala	Arg	Glu	Ala	Leu	Val	Glu	Leu	Ala	Asp	Arg	Thr	Gly	Ala
	210					215					220				
Ala	Leu	Ala	Thr	Thr	Val	Leu	Gly	Lys	Glu	Met	Phe	Ala	Gly	His	Pro
225					230					235					240
Arg	Asp	Val	Gly	Ile	Phe	Gly	Ser	Leu	Ala	His	Ser	Val	Ala	Ser	Thr
				245					250					255	
Val	Ile	Ala	Glu	Ser	Asp	Cys	Val	Ile	Ala	Phe	Gly	Ala	Ser	Leu	Asn
			260					265					270		
Met	Trp	Thr	Val	Leu	Asn	Gly	Glu	Leu	Leu	Arg	Gly	Lys	Arg	Val	Val
		275					280					285			
His	Val	Asp	Thr	Asp	Pro	Ala	Arg	Phe	Gly	Ser	Tyr	Ser	Pro	Val	Asp
	290					295					300				
Glu	Pro	Val	Ala	Gly	Asp	Ala	Arg	Arg	Thr	Ala	Glu	Thr	Met	Asn	Val
305					310					315					320
Leu	Leu	Asp	Gln	Ala	Gly	Val	Thr	Ala	Ala	Asn	Gly	Ala	Trp	Ala	Glu
				325					330					335	
Arg	Val	Ala	Gly	Gln	Leu	Ala	Gly	Phe	Ser	Pro	Gln	Asp	Asp	Val	Asp
			340					345					350		
Asp	Arg	Ser	Gly	Ala	Glu	Thr	Val	Asp	Ile	Arg	Thr	Ala	Met	Ile	Arg
		355					360					365			
Leu	Asp	Arg	Ile	Leu	Pro	Ala	Glu	Arg	Ser	Val	Val	Ser	Asp	Ile	Gly
	370					375					380				
Arg	Phe	Asp	Val	Gly	Val	Trp	Pro	Tyr	Leu	Arg	Val	Ala	Asp	Pro	Leu
385					390					395					400
His	Phe	Thr	Val	Met	Gly	Gly	Phe	Gly	Ser	Ile	Gly	Leu	Gly	Val	Ala
				405					410					415	
Gly	Ala	Ile	Gly	Ala	Ala	Thr	Ala	Gly	Thr	Gly	Arg	Pro	Val	Val	Ala
			420					425					430		
Ala	Val	Gly	Asp	Gly	Gly	Phe	Met	Met	His	Leu	Ser	Glu	Phe	Thr	Thr
		435					440					445			
Ala	Val	Arg	Tyr	Arg	Leu	Pro	Leu	Val	Val	Val	Val	Leu	Asn	Asp	Gly
	450					455					460				
Ala	Tyr	Gly	Ala	Glu	His	Tyr	Lys	Leu	Arg	Asn	His	Gly	Tyr	Asp	Pro
465					470					475					480
Ala	Tyr	Ser	Ala	Phe	Ala	Trp	Pro	Asp	Leu	Ala	Gly	Leu	Ala	Thr	Ala
				485					490					495	

Met Gly Ala Arg Ala Leu Thr Val Arg Lys Ala Glu Glu Leu Asp Ala  
 500 505 510

Val Gly Asp Leu Leu Ser Thr Leu Glu Gly Pro Leu Leu Val Asp Val  
 515 520 525

Arg Leu Asp Pro Asp Val Asn Leu Val Arg Tyr  
 530 535

<210> 14  
 <211> 683  
 <212> PRT  
 <213> Streptomyces parvulus Tü4055

<400> 14  
 Met Arg Gly Ala Arg Glu Asn Ser Met Thr Arg Ala Gly Pro Leu Glu  
 1 5 10 15

Gly Ile Ala Val Leu Met Ala Gly Arg Ser Thr Pro Ala Ala Leu Leu  
 20 25 30

Gly Arg Leu Leu Ala Asp Leu Gly Ala Arg Val Val Thr Leu Cys Arg  
 35 40 45

Ser Pro Asp His Gly Gly Pro Phe Glu Arg Trp Leu His Ser Ala Ala  
 50 55 60

Gln Ser Ala Ser Gly Trp Asp Gln Ala Ser Arg Leu Leu Gln Thr Ala  
 65 70 75 80

Asp Val Leu Val Cys Asp Ala Glu Gly Asp Glu Arg Leu Ala Ala Leu  
 85 90 95

Gly Leu Gly Ala Pro Glu Leu Pro His Arg Ser Pro Glu Leu Val Ala  
 100 105 110

Val Arg Leu Ser Ala Phe Gly Leu Thr Gly Pro Leu Arg Asp Ala Pro  
 115 120 125

Ala Thr Glu Arg Thr Leu Gln Ala Leu Ala Gly Leu Thr Ser Ala Thr  
 130 135 140

Gly Thr Glu Gly Glu Pro Ser Val Leu Ser Val Val Gly Leu Ala Ser  
 145 150 155 160

Arg Thr Ala Ala Leu Ser Gly Leu Ile Ala Val Val Ala Gly Leu Ile  
 165 170 175

Gly Arg Glu Arg Gly Gly Gly Gly Asp Tyr Leu Asp Ile Ala Glu Phe  
 180 185 190

Asp Ser Leu Phe Thr Leu Thr Gly Thr Leu Leu Pro Ser Val Ala Leu  
 195 200 205

Ala Gly Arg Pro Pro Arg Arg Thr Gly Asn Arg His Gly Met Ala Ala  
 210 215 220

Pro Trp Asn Ser Tyr Thr Cys Gln Asp Ala Pro Val Val Ile Cys Thr  
 225 230 235 240

Met Gly Glu Pro Ile Trp His Arg Leu Thr Ala Val Leu Gly Arg Arg  
 245 250 255



Asp	Leu	Pro	Asp	Asp	Pro	Arg	Phe	Ala	Asp	Thr	Ala	Ala	Arg	Val	Arg
			260					265					270		
Asn	Ala	Asp	Glu	Leu	Asp	Glu	Ile	Leu	Gly	Lys	Trp	Thr	Ala	Gly	Gln
		275					280					285			
Arg	Ala	Val	Asp	Val	Val	Thr	Ala	Leu	Arg	Ala	Ala	Gly	Ile	Pro	Cys
	290					295					300				
Ala	Gln	Val	Ala	Ala	Pro	Glu	Glu	Val	Arg	Asp	Gly	Ala	Ala	Ala	Arg
305					310					315					320
Arg	Arg	Gly	Leu	Val	Thr	Asp	Pro	Ser	Gly	Thr	Pro	Gly	Ser	Pro	Leu
				325					330					335	
Arg	Ser	Leu	Ile	Pro	Ala	Val	Thr	Asp	Gly	Pro	Met	Pro	Arg	Gln	Gly
			340					345					350		
Gly	Leu	Trp	Glu	Pro	Ile	Ala	Arg	Gly	Thr	Pro	Pro	Leu	Arg	Gly	Val
		355					360					365			
Arg	Leu	Leu	Glu	Val	Gly	Ser	Tyr	Thr	Ala	Gly	Pro	His	Ala	Gly	Arg
	370					375					380				
Leu	Leu	Ala	Gln	Leu	Gly	Ala	Asp	Val	Leu	Lys	Val	Glu	Pro	Pro	His
385					390					395					400
Gly	Glu	Gly	Ser	Arg	Arg	Leu	Ala	Gln	Gln	Val	Ala	Gly	Val	Gly	Tyr
				405					410					415	
Leu	Tyr	Tyr	Val	Asn	Asn	Ala	Gly	Lys	Arg	Ser	Cys	Arg	Leu	Asp	Leu
			420					425					430		
Ala	Asp	Ala	Glu	Asp	Arg	Ala	Gly	Phe	Glu	Arg	Leu	Leu	Ala	Gly	Cys
		435					440					445			
Asp	Ile	Val	Leu	Thr	Asn	Leu	Ala	Ala	Asp	Thr	Leu	Thr	Ala	Gln	Gly
	450					455					460				
Leu	Ala	Pro	Asp	Gln	Ile	Leu	Ser	Arg	His	Gly	Val	Val	His	Cys	Thr
465					470					475					480
Val	Thr	Gly	His	Gly	Leu	Ala	Ala	Ala	Asp	Arg	Ser	Val	Asp	Thr	Val
				485					490					495	
Ile	Gln	Ala	Glu	Ser	Gly	Ile	Met	Arg	Leu	Val	Gly	Gly	Pro	Gly	Ala
			500					505					510		
Gly	Leu	Arg	Thr	Pro	Val	Ser	Ser	Ala	Asp	Val	Leu	Gly	Ala	Tyr	Leu
		515					520					525			
Ala	Ala	Ala	Ala	Ala	Val	Val	Ser	Thr	Tyr	Val	Arg	Leu	Arg	Thr	Glu
	530					535					540				
His	Gly	Cys	Ala	Ala	Asp	Val	Ala	Leu	Phe	Asp	Ser	Ala	Val	Trp	Leu
545					550					555					560
Thr	Gln	Asp	Arg	Trp	Phe	Thr	Ala	Pro	Pro	Ala	Arg	Ala	Pro	His	Leu
				565					570					575	
Val	Arg	Ala	Ala	Asp	Gly	Thr	Val	Leu	Val	Asp	Ala	Glu	Gly	Pro	Pro
			580					585				590			
Pro	Arg	Ala	Glu	Gly	Pro	Val	Ala	Ala	Val	Leu	Asp	Ala	Ala	Ala	Ala

595

600

605

Val Gly Val Pro Ala Ala Pro Leu His Asp Leu Thr Arg Ala Val Arg  
610 615 620

His Pro Gln Val Leu Ala Arg Arg Met Ala Val Ala Arg Asp Cys Ala  
625 630 635 640

Gly Thr Thr Val Leu Ile Thr Gly Asn His Leu Arg Ser Leu Leu Arg  
645 650 655

Glu Asp Pro Pro Pro Thr Cys Ala Pro Val Asp Gln Asn Asp Pro Val  
660 665 670

Trp Leu Gln Pro Ala Pro Thr Glu Gly Gln Gln  
675 680

&lt;210&gt; 15

&lt;211&gt; 426

&lt;212&gt; PRT

&lt;213&gt; Streptomyces parvulus Tü4055

&lt;400&gt; 15

Met Thr Thr Arg Arg Arg Gln Arg His Pro Ala Leu Ser Pro Ser Cys  
1 5 10 15

Pro Ser Val Pro Phe Pro Leu Leu Glu Thr Glu Phe Val Leu Met Pro  
20 25 30

Ser Phe Pro Val Arg Arg Ser Val Pro Asp Thr Pro Pro Ala Glu His  
35 40 45

Leu Glu Leu Leu Lys Glu Ser Gly Gly Val Cys Pro Phe Thr Met Glu  
50 55 60

Asp Gly Arg Pro Ala Trp Leu Ala Ala Ser His Asp Ala Val Arg Ser  
65 70 75 80

Leu Leu Ala Asp Arg Arg Ile Ser Asn Asn Pro Ala Lys Thr Pro Pro  
85 90 95

Phe Ser Gln Arg Glu Ala Leu Gln Lys Glu Arg Gly Gln Phe Ser Arg  
100 105 110

His Leu Phe Asn Met Asp Ser Pro Glu His Asp Val Ala Arg Arg Met  
115 120 125

Ile Ala Glu Asp Phe Thr Pro Arg His Ala Glu Ala Val Arg Pro Tyr  
130 135 140

Phe Glu Glu Val Phe Gly Glu Ile Val Asp Glu Val Val His Lys Gly  
145 150 155 160

Pro Pro Ala Glu Met Ile Glu Ser Phe Ala Phe Pro Val Ala Thr Arg  
165 170 175

Thr Ile Cys Lys Val Leu Asp Ile Pro Glu Asp Asp Cys Glu Tyr Phe  
180 185 190

Gln Lys Arg Thr Glu Gln Ile Ile Glu Met Asp Arg Gly Glu Glu Asn  
195 200 205

Leu Glu Ala Val Val Glu Leu Arg Arg Tyr Val Asp Ser Val Met Gln  
210 215 220

Gln Arg Thr Ar G Lys Pro Gly Asp Asp Leu Leu Ser Arg Met Ile Val  
225 230 235 240

Lys Ala Lys Ala Ser Lys Glu Ile Glu Leu Ser Asp Ala Asp Leu Val  
245 250 255

Asp Asn Ala Met Phe Leu Leu Val Ala Gly His Glu Pro Ser Ala Asn  
260 265 270

Met Leu Gly Leu Gly Val Leu Ala Leu Ala Glu Phe Pro Asp Val Ala  
275 280 285

Glu Glu Leu Arg Ala Glu Pro His Leu Trp Pro Gly Ala Ile Asp Glu  
290 295 300

Met Leu Arg Tyr Tyr Thr Ile Ala Arg Ala Thr Lys Arg Val Ala Ala  
305 310 315 320

Ala Asp Ile Glu Tyr Glu Gly His Thr Ile Lys Glu Gly Asp Ala Val  
325 330 335

Ile Val Leu Leu Asp Thr Ser Asn Arg Asp Pro Lys Val His Ala Glu  
340 345 350

Pro Asn Arg Leu Asp Ile His Arg Ser Ala Gly Asn His Leu Ala Phe  
355 360 365

Ser His Gly Pro His Gln Cys Leu Gly Lys His Leu Val Arg Val Gln  
370 375 380

Leu Glu Ile Ala Leu Arg Ala Val Ala Glu Arg Leu Pro Gly Leu Arg  
385 390 395 400

Leu Asp Ile Ala Lys Glu Asp Ile Pro Phe Arg Gly Asp Ala Leu Ser  
405 410 415

Tyr Gly Pro Arg Gln Leu Arg Val Thr Trp  
420 425

<210> 16

<211> 454

<212> PRT

<213> Streptomyces parvulus Tü4055

<400> 16

Met Glu Lys Thr Asp Val Asp Arg Leu Arg Thr Leu Asp Arg Glu His  
1 5 10 15

Met Trp Tyr Pro Trp Thr Pro Met Thr Glu Trp Met Ala Arg Asp Gln  
20 25 30

Leu Val Val Glu Arg Ala Glu Gly Cys Trp Leu Ile Asp Ala Asp Gly  
35 40 45

Lys Arg Tyr Leu Asp Gly Arg Ser Ser Met Gly Met Asn Leu His Gly  
50 55 60

His Gly Arg Ser Glu Ile Val Glu Ala Leu Val Ala Gln Ala Arg Lys  
65 70 75 80

Ala Gly Glu Thr Thr Leu Tyr Arg Val Ser His Pro Ala Ala Val Glu  
85 90 95

Leu Ala Ala Arg Leu Ala Ser Met Ala Pro Ala Gly Leu Gln Arg Val  
 100 105 110  
 Phe Phe Ala Glu Ser Gly Ser Thr Ala Val Glu Thr Ala Leu Lys Ala  
 115 120 125  
 Ala Tyr Ala Tyr Trp Val Ala Lys Gly Glu Pro Gln Arg Ser Thr Phe  
 130 135 140  
 Val Ser Met Glu Gly Gly Tyr His Gly Glu Thr Leu Gly Thr Val Ser  
 145 150 155 160  
 Leu Arg Gly Thr Asn Gly Glu Gln Val Asp Met Ile Arg Lys Thr Tyr  
 165 170 175  
 Glu Pro Leu Leu Phe Pro Ser Leu Ser Phe His Gln Pro His Cys Tyr  
 180 185 190  
 Arg Cys Pro Val Gly Gln Ser Ser Asp Ser Asp Cys Gly Leu Glu Cys  
 195 200 205  
 Thr Asp Ser Leu Glu Asn Leu Leu Thr Arg Glu Lys Gly Arg Ile Ala  
 210 215 220  
 Ala Val Ile Val Glu Pro Arg Val Gln Ala Leu Ala Gly Val Ile Thr  
 225 230 235 240  
 Ala Pro Glu Gly His Leu Ala Lys Val Ala Glu Ile Thr Arg Arg His  
 245 250 255  
 Gly Val Leu Leu Ile Val Asp Glu Val Leu Thr Gly Trp Ala Arg Thr  
 260 265 270  
 Gly Pro Thr Phe Ser Cys Glu Ala Glu Gly Val Thr Pro Asp Leu Met  
 275 280 285  
 Thr Val Gly Lys Ala Leu Thr Gly Gly Tyr Leu Pro Leu Ser Ala Thr  
 290 295 300  
 Leu Ala Thr Glu Glu Ile Phe Gly Ala Phe Arg Glu Ser Val Phe Leu  
 305 310 315 320  
 Ser Gly Ser Thr Tyr Ser Gly Tyr Ala Leu Gly Ala Ala Val Ala Leu  
 325 330 335  
 Ala Ser Leu Asp Leu Phe Glu Lys Glu Asp Val Pro Ala Arg Ala Lys  
 340 345 350  
 Ala Leu Ala Asp Val Leu Thr Thr Ala Leu Glu Pro Phe Arg Ala Leu  
 355 360 365  
 Thr His Val Gly Asp Val Arg Gln Leu Gly Leu Ile Ala Gly Val Glu  
 370 375 380  
 Leu Val Ala Asp Arg Glu Thr Arg Ala Pro Tyr Pro Pro Gln Glu Arg  
 385 390 395 400  
 Val Val Asp Arg Ile Cys Thr Leu Ala Arg Asp Asn Gly Val Leu Val  
 405 410 415  
 Asn Ala Val Pro Gly Asp Val Ile Thr Met Leu Pro Ser Pro Ser Met  
 420 425 430  
 Ser Pro Asp Asp Leu Arg Phe Leu Thr Gly Thr Leu Tyr Thr Ala Val

435

440

445

Arg Glu Val Thr Glu Glu  
450

&lt;210&gt; 17

&lt;211&gt; 326

&lt;212&gt; PRT

&lt;213&gt; Streptomyces parvulus Tü4055

&lt;400&gt; 17

Met Arg Ala Ala Val Ile Arg Ala Trp Gly Gly Pro Glu Arg Leu Thr  
1 5 10 15

Leu Asp Arg Val Glu Arg Pro Ser Pro Pro Gly Trp Ile Ala Val  
20 25 30

Arg Val Glu Ala Cys Ala Leu Asn His Leu Asp Ile His Val Arg Asn  
35 40 45

Gly Leu Pro Gly Val Arg Leu Glu Leu Pro His Val Ser Gly Gly Asp  
50 55 60

Val Val Gly Val Val Glu Gln Ala Thr Asp Glu Ala Gly Glu Arg Leu  
65 70 75 80

Leu Gly Ser Arg Val Leu Leu Asp Pro Met Ile Gly Arg Gly Ile Leu  
85 90 95

Gly Glu His Tyr Trp Gly Gly Leu Ala Glu Tyr Val Val Ala Pro Ala  
100 105 110

His Asn Ala Leu Pro Val Pro Asp Gln Asp Ala Asp Pro Ala Arg Tyr  
115 120 125

Ala Ala Leu Pro Ile Ser Tyr Gly Thr Ala Gln Arg Met Leu Phe Ser  
130 135 140

Arg Ala Arg Leu Arg Pro Gly Glu Ser Val Leu Leu Phe Gly Ala Thr  
145 150 155 160

Gly Gly Val Gly Val Ala Cys Ala Gln Leu Ala Leu Arg Ala Gly Ala  
165 170 175

Arg Ile Ile Ala Cys Ser Gly Ser Pro Ala Lys Leu Ala Arg Leu Arg  
180 185 190

Arg Leu Gly Val Ile Asp Thr Ile Asp Thr Gly Thr Glu Asp Val Arg  
195 200 205

Arg Arg Val Arg Glu Leu Thr Asp Gly Gly Ala Asp Leu Val Val Asp  
210 215 220

Tyr Gln Gly Lys Asp Thr Trp Pro Val Ser Leu Arg Ser Ala Arg Ala  
225 230 235 240

Gly Gly Arg Ile Val Thr Cys Gly Ala Thr Thr Gly Tyr Glu Ala Thr  
245 250 255

Thr Asp Leu Arg Tyr Val Trp Ser Arg Gln Leu Asp Ile Leu Gly Ser  
260 265 270

Asn Ala Trp His Arg Asp Asp Leu His Thr Leu Val Asp Leu Val Ala  
275 280 285



Thr Asp Ala Leu Glu Pro Val Val His Ala Asp Phe Pro Leu Ser Arg  
 290 295 300

Ala Pro Glu Ala Val Ala Glu Leu Glu Glu Arg Arg Ala Phe Gly Lys  
 305 310 315 320

Val Val Ile Arg Thr Ala  
 325

<210> 18  
 <211> 556  
 <212> PRT  
 <213> Streptomyces parvulus Tü4055

<400> 18  
 Met Thr Gly Asn Thr Thr Ser Ala Ala Phe Leu Arg Arg Thr Gln Asn  
 1 5 10 15

Ala Leu Ala Met Gln Arg Lys Ile Cys Ala Gln Pro Glu Glu Thr Ala  
 20 25 30

Glu Arg Val Phe Ser Asp Ile Leu Ser Val Ser Arg Asp Thr Gly Phe  
 35 40 45

Gly Arg Glu His Gly Leu Ala Gly Val Arg Thr Arg Gln Glu Trp Arg  
 50 55 60

Arg Ala Val Pro Ile Arg Thr Tyr Asp Glu Leu Ala Pro Tyr Val Glu  
 65 70 75 80

Arg Gln Phe Ser Gly Glu Arg Arg Val Leu Thr Thr Asp Asp Pro Arg  
 85 90 95

Ala Phe Leu Arg Thr Ser Gly Ser Thr Gly Arg Ala Lys Leu Val Pro  
 100 105 110

Thr Thr Asp His Trp Arg Arg Val Tyr Arg Gly Pro Ala Leu Tyr Ala  
 115 120 125

Gln Trp Gly Leu Tyr Phe Glu Gln Ile Gly Thr His Arg Leu Thr Gly  
 130 135 140

Asp Glu Val Leu Asp Leu Ser Trp Glu Pro Gly Pro Ile Arg His Arg  
 145 150 155 160

Leu Arg Gly Phe Pro Val Tyr Ser Ile Thr Glu Arg Pro Val Ser Asp  
 165 170 175

Asp Pro Asp Asp Trp Asn Pro Pro Trp Arg His Ala Arg Trp Phe Thr  
 180 185 190

Arg Asp Ala Gly Ala Ala Thr Met Ala Asp Leu Leu Tyr Gly Lys Leu  
 195 200 205

Leu Arg Leu Ala Ala His Asp Leu Arg Leu Ile Val Ser Val Asn Pro  
 210 215 220

Ser Lys Ile Val Leu Leu Ala Glu Thr Leu Lys Glu Asn Ala Glu Arg  
 225 230 235 240

Leu Ile Gln Asp Leu His Asp Gly His Gly Thr Asp Arg Ala Ala Arg  
 245 250 255

Pro Asp Phe Leu Arg Arg Leu Thr Ala Ala Phe Asp Arg Thr Gly Gly  
 260 265 270

Arg Pro Leu Leu Thr Asp Leu Trp Pro Gly Leu Arg Leu Leu Val Cys  
 275 280 285

Trp Asn Ser Ala Ser Ala Ala Leu Tyr Gly Pro Trp Leu Ser Arg Leu  
 290 295 300

Ala Thr Gly Val Ala Ala Leu Pro Phe Ser Thr Thr Gly Thr Glu Gly  
 305 310 315 320

Ile Val Thr Leu Pro Val Asp Asp His Leu Ser Ala Gly Pro Leu Ala  
 325 330 335

Val Asp Gln Gly His Phe Glu Phe Val Pro Trp Gln Asp Leu Asp Asp  
 340 345 350

Gly Ser Pro Leu Pro Glu Asp Thr Pro Thr Leu Gly Tyr Asp Glu Leu  
 355 360 365

Glu Leu Gly Ala Asp Tyr Arg Leu Val Met Ser Gln Ala Asn Gly Leu  
 370 375 380

Tyr Arg Tyr Asp Val Gly Asp Val Tyr Arg Val Val Gly Ala Val Gly  
 385 390 395 400

Ala Thr Pro Arg Leu Glu Phe Leu Gly Arg Ala Gly Phe Gln Ser Ser  
 405 410 415

Phe Thr Gly Glu Lys Leu Thr Glu Ser Asp Val His Thr Ala Val Met  
 420 425 430

Arg Val Leu Gly Ser Glu Arg Thr Asp His Pro His Phe Ser Gly Ile  
 435 440 445

Pro Val Trp Asp Thr Pro Pro His Tyr Leu Val Ala Ile Glu Trp Ala  
 450 455 460

Asp Ala His Gly Thr Leu Asn Val Gln Asp Thr Ala Arg Arg Ile Asp  
 465 470 475 480

Ala Thr Leu Gln Glu Val Asn Val Glu Tyr Ala Asp Lys Arg Arg Ser  
 485 490 495

Gly Arg Leu Arg Pro Leu Gln Ile Leu Pro Leu Val Pro Gly Ala Phe  
 500 505 510

Gly Gln Ile Ala Glu Arg Arg Phe Arg Gln Gly Thr Ala Gly Ala Gln  
 515 520 525

Ile Lys His His Trp Leu Gln Lys Asp Ser Ala Phe Leu Asp Thr Leu  
 530 535 540

Arg Asp Leu Asp Leu Val Arg Ala Arg Pro Gly Thr  
 545 550 555

&lt;210&gt; 19

&lt;211&gt; 305

&lt;212&gt; PRT

&lt;213&gt; Streptomyces parvulus Tü4055

&lt;400&gt; 19

Met Arg Ile Gly Phe Ala Ala Pro Met Ser Gly Pro Trp Ala Thr Pro

1

5

10

15

Asp Thr Ala Val His Val Ala Arg Thr Ala Glu Gln Leu Gly Tyr Ala  
20 25 30

Ser Leu Trp Thr Tyr Gln Arg Val Leu Gly Ala Pro Asp Asp Ser Trp  
35 40 45

Gly Glu Ala Asn Arg Ser Val His Asp Pro Leu Thr Thr Leu Ala Phe  
50 55 60

Leu Ala Ala His Thr Thr Gly Ile Arg Leu Gly Val Ala Val Leu Ile  
65 70 75 80

Met Pro Leu His Thr Pro Ala Val Leu Ala Lys Gln Leu Thr Thr Leu  
85 90 95

Asp Leu Leu Ser Gly Gly Arg Leu Asp Val Gly Leu Gly Asn Gly Trp  
100 105 110

Ala Ala Glu Glu Tyr Ala Ala Ala Gly Val Thr Pro Thr Gly Leu Ser  
115 120 125

Arg Arg Ala Glu Asp Phe Leu Ala Cys Leu Arg Ala Leu Trp Gly Glu  
130 135 140

Gln Thr Val Val Glu His Asp Gly Pro Phe Tyr Arg Val Pro Pro Ala  
145 150 155 160

Arg Phe Asp Pro Lys Pro Ala Gln Ser Pro His Pro Pro Leu Leu Leu  
165 170 175

Gly Gly Ala Ala Pro Gly Ala Leu Arg Arg Ala Gly Arg Leu Cys Asp  
180 185 190

Gly Trp Ile Ala Ser Ser Lys Ala Gly Pro Ala Ala Ile Arg Asp Ala  
195 200 205

Ile Thr Val Val Arg Asp Ser Ala Glu Arg Thr Gly Arg Asp Pro Ala  
210 215 220

Thr Leu Arg Phe Val Cys Arg Ala Pro Val Arg Leu Arg Thr Arg Ser  
225 230 235 240

Ala Pro Asn Glu Pro Pro Leu Thr Gly Thr Ala Glu Thr Ile Arg Ala  
245 250 255

Asp Leu Ala Ala Leu Ala Asp Thr Gly Leu Thr Glu Ile Phe Leu Asp  
260 265 270

Pro Asn Phe Asp Pro Glu Ile Gly Ser Pro Asp Ala Pro Thr Gly Asp  
275 280 285

Val Arg His Arg Val Asp Leu Leu Leu His Glu Leu Ala Pro Ala Asn  
290 295 300

Trp  
305

<210> 20

<211> 248

<212> PRT

<213> Streptomyces parvulus T04055

&lt;400&gt; 20

Met Leu Ile Ala Arg Ala Ala Val Gly Glu Asp Arg Thr Tyr Ala Arg  
 1 5 10 15

Val Asp Thr Asp Thr Gly Leu Ile His Leu Leu Ala Gly Thr Pro Tyr  
 20 25 30

Asp Glu Ile Arg Pro Thr Gly Glu Thr Arg Pro Leu Ala Glu Ala Arg  
 35 40 45

Leu Leu Ala Pro Val Glu Pro Ser Lys Val Leu Val Ala Gly Arg Asn  
 50 55 60

Tyr Gly Asp Val Val Thr Pro Asp Leu Val Val Phe Met Lys Pro Ser  
 65 70 75 80

Thr Ser Val Val Gly Pro Arg Ser Thr Val Leu Leu Pro Ala Glu Ala  
 85 90 95

Lys Gln Val Arg Tyr Glu Gly Glu Leu Ala Val Val Ile Gly Arg Arg  
 100 105 110

Cys Lys Asp Val Pro Glu Asp Thr Ala Asp Gln Ala Val Phe Gly Tyr  
 115 120 125

Thr Cys Ala Asn Asp Val Thr Ala Trp Asp Val Gly Glu Pro Lys Gly  
 130 135 140

His Trp Thr Lys Ala Lys Ser Phe Asp Thr Phe Cys Pro Leu Gly Pro  
 145 150 155 160

Trp Ile Arg Thr Asp Leu Asp Pro Ala Asp Leu Val Leu Arg Thr Thr  
 165 170 175

Val Asn Gly Thr Leu Arg Gln Asp Gly Ser Thr Lys Glu Met Asn Arg  
 180 185 190

Asn Val Arg Ala Leu Val Ser Arg Cys Ser Ser Leu Met Thr Leu Leu  
 195 200 205

Pro Gly Asp Val Ile Leu Thr Gly Thr Pro Ala Gly Ala Gly Val Leu  
 210 215 220

Arg Pro Gly Asp Glu Val Val Val Glu Ile Asp Gly Ile Gly Ser Leu  
 225 230 235 240

Ala Asn Pro Ile Gly Val Ala Lys  
 245

&lt;210&gt; 21

&lt;211&gt; 675

&lt;212&gt; PRT

&lt;213&gt; Streptomyces parvulus Tü4055

&lt;400&gt; 21

Met Ser Val Ile Arg Pro Thr Ala Glu Thr Glu Arg Ala Val Val Val  
 1 5 10 15

Val Pro Ala Gly Thr Thr Cys Ala Asp Ala Val Thr Ala Ala Lys Leu  
 20 25 30

Pro Arg Asn Gly Pro Asn Ala Ile Val Val Val Arg Asp Pro Ser Gly  
 35 40 45

Ala Leu Arg Asp Leu Asp Trp Thr Pro Asp Ser Asp Val Glu Val Glu  
 50 55 60  
 Ala Val Ala Leu Ser Ser Glu Asp Gly Leu Thr Val Leu Arg His Ser  
 65 70 75 80  
 Thr Ala His Val Leu Ala Gln Ala Val Gln Gln Leu Trp Pro Glu Ala  
 85 90 95  
 Arg Leu Gly Ile Gly Pro Pro Ile Glu Asn Gly Phe Tyr Tyr Asp Phe  
 100 105 110  
 Asp Val Glu Arg Pro Phe Gln Pro Glu Asp Leu Glu Arg Val Glu Gln  
 115 120 125  
 Arg Met Lys Glu Ile Ile Lys Ser Gly Gln Arg Phe Cys Arg Arg Glu  
 130 135 140  
 Phe Pro Asp Arg Glu Ala Ala Arg Ala Glu Leu Ala Lys Glu Pro Tyr  
 145 150 155 160  
 Lys Leu Glu Leu Val Asp Leu Lys Gly Asp Val Asp Ala Ala Glu Ala  
 165 170 175  
 Met Glu Val Gly Gly Ser Asp Leu Thr Ile Tyr Asp Asn Leu Asp Ala  
 180 185 190  
 Arg Thr Gly Asp Val Cys Trp Ser Asp Leu Cys Arg Gly Pro His Leu  
 195 200 205  
 Pro Ser Thr Arg Leu Ile Pro Ala Phe Lys Leu Leu Arg Asn Ala Ala  
 210 215 220  
 Ala Tyr Trp Arg Gly Ser Glu Lys Asn Pro Gln Leu Gln Arg Ile Tyr  
 225 230 235 240  
 Gly Thr Ala Trp Pro Thr Arg Asp Glu Leu Lys Ser His Leu Ala Ala  
 245 250 255  
 Leu Glu Glu Ala Ala Lys Arg Asp His Arg Arg Ile Gly Glu Glu Leu  
 260 265 270  
 Asp Leu Phe Ala Phe Asn Lys Glu Ile Gly Arg Gly Leu Pro Leu Trp  
 275 280 285  
 Leu Pro Asn Gly Ala Ile Ile Arg Asp Glu Leu Glu Asp Trp Ala Arg  
 290 295 300  
 Lys Thr Glu Arg Lys Leu Gly Tyr Lys Arg Val Val Thr Pro His Ile  
 305 310 315 320  
 Thr Gln Glu Asp Leu Tyr Tyr Leu Ser Gly His Leu Pro Tyr Tyr Ala  
 325 330 335  
 Glu Asp Leu Tyr Ala Pro Ile Asp Ile Asp Gly Glu Lys Tyr Tyr Leu  
 340 345 350  
 Lys Pro Met Asn Cys Pro His His His Met Val Tyr Lys Ala Arg Pro  
 355 360 365  
 His Ser Tyr Arg Asp Leu Pro Tyr Lys Val Ala Glu Tyr Gly Thr Val  
 370 375 380  
 Tyr Arg Phe Glu Arg Ser Gly Gln Leu His Gly Met Met Arg Thr Arg



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<400> 22
Met Pro Arg Gly Ile Ala Val Asp Val Leu Arg Ala Gly Asp Arg Trp
  1             5             10             15
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Pro His Ser Ala Ala Pro Arg His Arg Gly Leu Leu Asn Ala Trp Trp  
 20 25 30

Gly Ala Trp Val Trp Ala Thr Val Phe Asp Arg Tyr Ala Ser Arg Thr  
 35 40 45

Tyr Asp Asp Ala Gln Asp Val Asp Ala Ile His Asp Ala Ala Gly Leu  
 50 55 60

Val Met Ala Gly Ala Gly Phe Asp Ile Leu Ala Ala Val Leu Ala Ile  
 65 70 75 80

Leu Phe Val Arg Arg Leu Thr Ala Ala Gln His Ala Lys Ala Leu Ala  
 85 90 95

Gly Pro Thr Pro Pro Thr His  
 100

<210> 23

<211> 868

<212> PRT

<213> Streptomyces parvulus Tü4055

<400> 23

Met Glu Ala Phe Leu Leu Leu Ala Ala Glu Ser Val Leu Leu Arg Arg  
 1 5 10 15

Asp Gln Ser Val Tyr Val Thr Pro Gly Ser Glu Pro Asp Gly Pro Pro  
 20 25 30

Arg Ala Ala Leu Arg Arg Leu Glu Ala Glu Leu Leu Gly Arg Gly His  
 35 40 45

Ala Val Ser Ala Pro Leu His Ala Val Leu Ala Ser Leu Asp Ser Glu  
 50 55 60

Glu Leu Ala Ala Ala His Val Arg Leu Val Gly Leu Val Asp Asp Leu  
 65 70 75 80

Leu Gly Ser Asp Arg Thr His Thr Pro Leu Phe Arg Arg Phe Pro Arg  
 85 90 95

Thr Val Pro Arg Asp Thr Glu Ala Leu Tyr Val Asp Arg Val Phe Ala  
 100 105 110

Phe Leu Leu Gln Gln Pro Glu Gln Pro Cys Val Leu Cys Gly Glu Ala  
 115 120 125

Arg Thr Val Leu Pro Val Ser Pro Cys Ala His Leu Val Cys Arg Leu  
 130 135 140

Cys Trp Asp Gly Ser Asp Tyr Ala Gly Cys Pro Leu Cys His Arg Arg  
 145 150 155 160

Ile Asp Gly Asp Asp Pro Phe Leu Arg Pro Val Arg Ala Val Gly Ala  
 165 170 175

Ala Arg Ala Thr Val Pro Gly Pro Leu Arg Leu Leu Arg Leu Gly Thr  
 180 185 190

Asp Met Thr Ala Asp Ala Thr Thr Ala Val Asp Ala Leu Leu Ala Arg  
 195 200 205

Arg Thr Pro Leu Ser Pro Gln Asp Arg Asp Asp Leu Leu Thr Leu Leu  
 210 215 220  
 Pro Leu Thr Pro Ala Gly Arg Gly Asp Leu Pro Gln Asp Ile Pro Val  
 225 230 235 240  
 Arg Glu Thr Lys Ala Leu Val Leu Gly Ala Leu Val Arg Arg Ala Pro  
 245 250 255  
 Ser Arg Pro Ala Leu Arg Arg Leu Leu Ala Glu Arg Leu Thr Thr Ala  
 260 265 270  
 Thr Asp Val Leu Arg Leu Leu Ala Val Leu Ser Gly Gly Asp Ala Gly  
 275 280 285  
 Leu Val Thr Pro Ala Arg Phe Thr Asn Val Pro Arg Ser Leu Arg Arg  
 290 295 300  
 Asp Leu Leu Ala Val Leu Asp Gly Leu Pro Ala Pro Tyr Leu Val Glu  
 305 310 315 320  
 Asp Met Leu Arg His Pro Thr Ala Trp Lys Arg Ala Ala Glu Val Leu  
 325 330 335  
 His Pro Phe Glu Gly His Thr Arg His Pro Arg Ala Ala Leu Ala Thr  
 340 345 350  
 Ala Val Leu Arg Ala Thr Pro Leu Asp Pro Asp Thr Ala Phe Gly Ala  
 355 360 365  
 Ala Leu Leu Thr Thr Ala Ala Ala His Pro Asp Ala Val Arg Pro Asp  
 370 375 380  
 Gly Thr Arg Val Arg Pro Ala Thr Trp Ala Gly Arg Leu Glu Gln Ala  
 385 390 395 400  
 Met Ala Glu Gly Asp Ala Ala Arg Ala Ala Ala Leu Ala Gly Glu Arg  
 405 410 415  
 Pro Gly Glu Leu Val Arg Arg Leu Asp Val Leu Leu Arg Leu His Thr  
 420 425 430  
 Asp Glu Ala Leu Val Pro Glu Leu Glu Lys Ala Leu Arg His Gly Leu  
 435 440 445  
 Pro Lys Val Gly Pro Gly Pro Leu Leu Ser Ala Leu Gly Ala Leu Arg  
 450 455 460  
 Thr Arg Thr Glu Asp Arg Thr Gly Thr Arg Arg Val Phe Phe Pro Arg  
 465 470 475 480  
 Gly Asp Val Thr Arg Ala Leu Ser Val Pro Glu Arg Arg Pro Ala Leu  
 485 490 495  
 Pro Ala Gly Pro Val Ser Glu Val Val Ala Leu Leu Glu Gly Glu Leu  
 500 505 510  
 Leu Arg Arg Phe Ala Ala Gly Arg Pro Tyr Glu Leu Ser Val Leu Asp  
 515 520 525  
 Ala Gly Leu Thr Asp Leu Thr Val Pro Phe Thr Glu Arg Thr Ala Ala  
 530 535 540  
 Lys Ala Leu Val Thr Val Gly Arg Gly Ser Val Gln Ala Leu Pro Glu

545		550		555		560
Gly Ser Val Leu Arg	Leu Phe Leu His Trp	Thr Glu Pro Arg Gly Asn				
	565		570		575	
Arg Thr Asp Leu Asp	Leu Ser Val Ala Phe Phe Asp	Ala Glu Trp Thr				
	580		585		590	
Phe Thr Gly Leu Cys Asp	Tyr Thr Asn Leu Val His Gly	Pro Asp Ala				
	595		600		605	
Ala Ile His Ser Gly Asp	Leu Thr Ser Ala Pro Ala	Pro Arg Gly Ala				
	610		615		620	
Thr Glu Tyr Val Asp	Leu Asp Leu Glu Arg Leu	Ala Arg Arg Gly Asp				
	625		630		635	
Thr Tyr Ala Val Pro	Leu Val Phe Ser Tyr Asn	Asn Val Pro Phe Glu				
	645		650		655	
Glu Leu Pro Asp Ala	Phe Ala Gly Phe Met Ala	Leu Pro Ala Glu Gly				
	660		665		670	
Pro Arg Asp Ala Thr	Tyr Asp Pro Arg Thr Val	Arg Gln Arg Phe Asp				
	675		680		685	
Leu Ala Gly Asp Ser	Lys Val Cys Leu Pro Met	Ile Val Asp Leu Ala				
	690		695		700	
Arg Arg Arg Ala Leu	Trp Thr Asp Thr His Leu	Pro Ser Ala Gly Gly				
	705		710		715	
Phe Gln Ser Ile Gly	Ser His Gly Gly Gly Glu	Leu Ala Ala Val Ala				
	725		730		735	
Gly Asp Leu Trp Gln	Gln Phe Thr Ser Gly Gly	Arg Ala Thr Leu Trp				
	740		745		750	
Asp Leu Ala Val Leu	Arg Ala Ala Ala Leu Ser	Pro Glu Val Ala Val				
	755		760		765	
Val Ser Arg Glu Pro	Glu Pro Ala Val Leu Arg	Tyr Arg Arg Arg Ala				
	770		775		780	
Ala Glu Ser Glu Ala	Ala Phe Ala Val Arg Val	Ala Ser His Lys Asp				
	785		790		795	
Ala Glu Glu Arg Leu	Ala His Thr Asp Pro Asp	Ser Ala Ala Ala Gly				
	805		810		815	
Leu Ala Ala Gly Arg	Arg Val Phe Leu Ala Thr	Val His Gly Asp Val				
	820		825		830	
Arg Pro Pro Gly Ala	Ser Gly Thr Ser Tyr Arg	Leu Phe Pro Gly Ala				
	835		840		845	
Gly Asp Ala Ser Pro	Thr Leu Thr Arg Val Thr	Ala Gly Asp Leu Leu				
	850		855		860	
Ala Glu Leu Gly						
865						

&lt;210&gt; 24

&lt;211&gt; 212

&lt;212&gt; PRT

&lt;213&gt; Streptomyces parvulus Tü4055

&lt;400&gt; 24

Met Ala Glu Gln Ile Ala Gly Ile Glu Ile Pro Asp Ser Ala Pro Ala  
 1 5 10 15

Arg Glu Ala Thr Asp Leu Ile Arg Asp Thr Thr Pro Pro Leu Ile Phe  
 20 25 30

His His Ser Arg Arg Val Tyr Leu Phe Gly Ser Leu Gln Ala Ala Ala  
 35 40 45

Leu Gly Ile Arg Pro Asp Pro Glu Leu Leu Tyr Ile Ala Ala Leu Phe  
 50 55 60

His Asp Thr Gly Leu Val Pro Pro Tyr Arg Gly Asp Asp Gln Arg Phe  
 65 70 75 80

Glu Met Asp Gly Ala Asp Gln Ala His Ala Phe Leu Leu Ala His Gly  
 85 90 95

Ile Pro Glu Ala Asp Ala Asp Thr Val Trp Thr Ala Val Ala Leu His  
 100 105 110

Thr Thr Pro Glu Val Pro Tyr Arg Met Ala Pro Glu Ile Ala Ala Thr  
 115 120 125

Thr Ala Gly Val Glu Thr Asp Val Leu Gly Leu Arg Leu Gly Asn Leu  
 130 135 140

Thr Arg Ala Gln Ile Asp Ala Val Thr Ala Ala His Pro Arg Pro Asp  
 145 150 155 160

Phe Lys Lys Gln Ile Leu Arg Ala Phe Thr Glu Gly Phe Glu His Arg  
 165 170 175

Pro Ala Thr Thr Phe Gly Thr Val Asn Ala Asp Val Leu Glu His Phe  
 180 185 190

Ala Pro Gly Phe Arg Arg Thr Asp Phe Val Glu Val Ile Glu Asn Ser  
 195 200 205

Ala Trp Pro Glu  
 210

&lt;210&gt; 25

&lt;211&gt; 329

&lt;212&gt; PRT

&lt;213&gt; Streptomyces parvulus Tü4055

&lt;400&gt; 25

Met Thr Ala Arg Ala His Ser Val Gly Ile Leu Val Phe Asp Gly Met  
 1 5 10 15

Lys Met Leu Asp Leu Ser Gly Pro Ala Glu Val Phe Ala Glu Ala Asn  
 20 25 30

Arg Phe Gly Ala Arg Tyr Arg Leu Gly Val Val Ser Pro Asp Gly Ala  
 35 40 45

Pro Val Arg Ser Ser Ile Gly Leu Leu Val Pro Ala Glu Ala Asp Ala  
 50 55 60

Arg Ser Ala Gly Pro Pro Asp Thr Leu Val Val Val Gly Gly Asp Ala  
 65 70 75 80  
 Leu Pro Gly Ser Pro Val Asp Pro Arg Leu Ile Asp Ala Ala Lys Ala  
 85 90 95  
 Leu Ala Ala Arg Ala Gly Arg Val Ala Ser Val Cys Thr Gly Ala Phe  
 100 105 110  
 Val Leu Gly Ala Ala Gly Leu Leu Glu Gly Arg Arg Ala Thr Thr His  
 115 120 125  
 Trp Gln His Thr Thr Ala Leu Ala Arg Arg Cys Pro Ser Thr Arg Val  
 130 135 140  
 Glu Pro Asp Ala Ile Phe Val Lys Asp Gly Ala Thr Tyr Thr Ser Ala  
 145 150 155 160  
 Gly Val Thr Ala Gly Ile Asp Leu Ala Leu Ala Leu Leu Glu Glu Asp  
 165 170 175  
 His Gly Pro Asp Leu Ala Arg Arg Val Ala Arg Ser Leu Val Val Tyr  
 180 185 190  
 Leu Gln Arg Ala Gly Gly Gln Ser Gln Phe Ser Ala Ser Leu Arg Gly  
 195 200 205  
 Pro Ala Pro Arg Thr Pro Val Leu Arg Gln Val Gln Asp Ala Val Gln  
 210 215 220  
 Ala Asp Pro Ala Ala Asp His Ser Leu Ala Ala Leu Ala Ala Arg Val  
 225 230 235 240  
 Arg Val Ser Pro Arg His Leu Thr Arg Met Phe Arg Ala Glu Leu Asp  
 245 250 255  
 Val Thr Pro Val Lys Tyr Val Glu Leu Ile Arg Phe Asp Ile Ala Lys  
 260 265 270  
 Ala Leu Leu Asp Ser Gly His Asn Ala Thr Glu Ala Ala Ala Leu Ser  
 275 280 285  
 Gly Phe Pro Ser Tyr Glu Ser Leu Arg Arg Ala Phe Ala Arg His Leu  
 290 295 300  
 Gly Leu Ser Pro Thr Arg Tyr Arg Gln Arg Phe Ala Thr Thr Val Pro  
 305 310 315 320  
 Asp Ala Gly Pro Arg Pro Asp Gly Gly  
 325

<210> 26  
 <211> 276  
 <212> PRT  
 <213> Streptomyces parvulus Tü4055

<400> 26  
 Met Gly Thr Val Thr Thr Ser Asp Gly Thr Ser Ile Phe Tyr Lys Asp  
 1 5 10 15  
 Trp Gly Pro Arg Asp Ala Pro Pro Ile Val Phe His His Gly Trp Pro  
 20 25 30

Leu Thr Ala Asp Asp Trp Asp Asn Gln Met Leu Phe Phe Leu Ser His



35 40 45  
 Gly Tyr Arg Val Ile Ala His Asp Arg Arg Gly His Gly Arg Ser Gly  
 50 55 60  
 Gln Pro Ser Thr Gly His Glu Met Asp Thr Tyr Ala Ala Asp Val Ala  
 65 70 75 80  
 Ala Leu Thr Glu Ala Leu Asp Leu Arg Asp Ala Val His Ile Gly His  
 85 90 95  
 Ser Thr Gly Gly Gly Glu Val Ala Arg Tyr Val Ala Arg Ala Glu Pro  
 100 105 110  
 Gly Arg Val Ala Lys Ala Val Leu Val Gly Ala Val Pro Pro Val Met  
 115 120 125  
 Val Lys Ser Asp Ala Asn Pro Gly Gly Thr Pro Ile Glu Val Phe Asp  
 130 135 140  
 Gly Phe Arg Thr Ala Leu Ala Ala Asn Arg Ala Gln Phe Tyr Ile Asp  
 145 150 155 160  
 Val Pro Ser Gly Pro Phe Tyr Gly Phe Asn Arg Glu Gly Ala Lys Val  
 165 170 175  
 Ser Gln Gly Leu Ile Asp Asn Trp Trp Arg Gln Gly Met Ser Gly Ala  
 180 185 190  
 Ala Asn Ala His Tyr Glu Cys Ile Lys Ala Phe Ser Glu Thr Asp Phe  
 195 200 205  
 Thr Glu Asp Leu Lys Ala Ile Asp Val Pro Val Leu Val Ala His Gly  
 210 215 220  
 Thr Asp Asp Gln Val Val Pro Tyr Ala Asp Ser Ala Pro Leu Ser Val  
 225 230 235 240  
 Lys Leu Leu Lys Asn Gly Thr Leu Lys Ser Tyr Glu Gly Leu Pro His  
 245 250 255  
 Gly Met Leu Ser Thr His Pro Glu Val Val Asn Pro Asp Leu Leu Asp  
 260 265 270  
 Phe Val Arg Ser  
 275

<210> 27  
 <211> 185  
 <212> PRT  
 <213> Streptomyces parvulus Tü4055

<400> 27  
 Met Gly Val Met Ile Gly Pro Ala Gly Arg Glu Arg Asp Glu Gly Asp  
 1 5 10 15  
 His Val Thr Gln Gln Ala Pro Val Ala Thr Asp Glu Arg Arg Val Phe  
 20 25 30  
 Val Asp Lys Gln Thr Pro Gly Ala Tyr Lys Ala Phe Val Ala Ala Ala  
 35 40 45  
 Glu Ser Val Arg Glu Ala Ala Ala Ala Gly Leu Asp Arg Leu Leu  
 50 55 60

Val Glu Leu Val Asn Ile Arg Val Ser Gln Leu Asn Ala Cys Ala Tyr  
 65 70 75 80  
 Cys Leu Ser Leu His Thr Arg Ala Ala Leu Arg Ala Gly Glu Thr Thr  
 85 90 95  
 Gln Arg Leu Ala Val Leu Pro Ala Trp Arg Asp Thr Glu Leu Phe Thr  
 100 105 110  
 Ala Arg Glu Arg Ala Ala Leu Ala Leu Ala Glu Ala Thr Thr Arg Pro  
 115 120 125  
 Ala Asp Ala Ala Ala Gln Ser Ala Ala Tyr Ala Gln Ala Arg Gly Val  
 130 135 140  
 Leu Ser Asp Asp Glu Val Ser Ala Val Ile Trp Val Ala Ile Ser Ile  
 145 150 155 160  
 Asn Ala Phe Asn Arg Val Ser Val Leu Ser Lys His Pro Val Arg Gly  
 165 170 175  
 Ala Ala Pro Ala Pro Val Ser Pro Ala  
 180 185

<210> 28  
 <211> 324  
 <212> PRT  
 <213> Streptomyces parvulus Tü4055

<400> 28  
 Met Val Ser Asn Thr Glu Thr Arg Pro Ala Glu Met Arg Cys Gly Ala  
 1 5 10 15  
 Leu Glu Asp Glu Val Pro Ala Ala Gly Val Glu Val Leu Thr Ala Arg  
 20 25 30  
 Asp Val Pro Leu Gly Gly Pro Arg Ala Met Thr Val Arg Arg Thr Leu  
 35 40 45  
 Pro Gln Arg Ala Arg Thr Leu Ile Gly Ala Trp Cys Phe Ala Asp His  
 50 55 60  
 Tyr Gly Pro Asp Asp Val Ala Ala Ser Gly Gly Met Asp Val Ala Pro  
 65 70 75 80  
 His Pro His Ile Gly Leu Gln Thr Val Ser Trp Leu Phe Ser Gly Glu  
 85 90 95  
 Ile Glu His Arg Asp Ser Leu Gly Thr His Ala Phe Val Arg Pro Gly  
 100 105 110  
 Glu Leu Asn Leu Met Thr Gly Gly Phe Gly Ile Ala His Ser Glu Val  
 115 120 125  
 Ser Thr Pro Asp Thr Thr Val Leu His Gly Val Gln Leu Trp Val Ala  
 130 135 140  
 Leu Pro Glu Glu His Arg Asp Thr Gly Arg Asp Phe Gln His His Ala  
 145 150 155 160  
 Pro Ala Pro Val Ala Phe Asp Gly Gly Thr Ala Arg Val Phe Leu Gly  
 165 170 175

Ser Leu Ala Gly Asp Thr Ser Pro Val Ser Thr Phe Thr Pro Leu Leu  
 180 185 190

Gly Ala Glu Leu Thr Leu Val Pro Gly Gly Thr Ala Thr Leu Asp Val  
 195 200 205

Asp Pro Gly Phe Glu His Gly Val Leu Val Asp Ser Gly Asp Val Arg  
 210 215 220

Val Glu Gly Ala Val Val Arg Pro Ala Glu Leu Gly Tyr Val Ala Pro  
 225 230 235 240

Gly Arg Ala Thr Leu Thr Leu Thr Asn Glu Ser Ala Ala Pro Ala Arg  
 245 250 255

Leu Ile Leu Leu Gly Gly Pro Pro Phe Pro Glu Glu Ile Ile Met Trp  
 260 265 270

Trp Asn Phe Ile Gly Arg Ser His Asp Glu Ile Val Arg Ala Arg Glu  
 275 280 285

Asp Trp Met Lys Gly Asp Arg Phe Gly Glu Val His Gly Tyr Asp Gly  
 290 295 300

Ala Pro Leu Pro Ala Pro Glu Leu Pro Asn Ala Pro Leu Lys Pro Arg  
 305 310 315 320

Arg Arg Ala Arg

<210> 29  
 <211> 126  
 <212> PRT  
 <213> Streptomyces parvulus Tü4055

<400> 29  
 Met Val Pro Thr Met Leu Cys Met Val Ala Val Pro Glu Ser His Ser  
 1 5 10 15

Gly Trp Thr Phe Val Thr Asn His Ala Arg Val Leu Ala Ala Ile Ala  
 20 25 30

Asp Asn Pro Asn Val Arg Ile Arg Asp Ile Ala Ala His Cys Arg Leu  
 35 40 45

Thr Glu Arg Ala Val Gln Arg Ile Ile Ser Asp Leu Glu Gln Asp Gly  
 50 55 60

Tyr Leu Ser His Thr Arg Asp Gly Arg Ser Asn Ile Tyr Arg Val Glu  
 65 70 75 80

Pro Asp Lys Val Leu Arg His Pro Ala Glu Ala Gly Leu Thr Val Ala  
 85 90 95

Ala Leu Leu Ser Leu Leu Val Arg Asp Glu Thr Asp His Gly Arg Ser  
 100 105 110

Ala Gly Pro Gly Ser Arg Pro Ala Arg Ser Ser Ala Ala Arg  
 115 120 125

<210> 30  
 <211> 127  
 <212> PRT  
 <213> Streptomyces parvulus Tü4055

&lt;400&gt; 30

Met Ser Leu Asp Glu Ala Val Ala Gly Cys Ser Arg His Thr Gly Arg  
 1 5 10 15

Arg Arg Leu Pro Ala Ala Glu Gln Pro Thr Gln Ala Gln Tyr Glu Ala  
 20 25 30

His Gly Ala Trp Val Val Ser Ala Arg Gly Ala Tyr Asp Met Asn Ser  
 35 40 45

Val Glu Pro Leu Ala Asp Ala Leu Lys Asp Ala Ala Glu Lys Ser Pro  
 50 55 60

Lys Val Val Leu Asp Ala Ser Gly Ile Thr Phe Ala Asp Ser Thr Leu  
 65 70 75 80

Leu Ser Leu Leu Ile Leu Thr His Gln Ala Thr Asp Phe Arg Val Ala  
 85 90 95

Ala Pro Thr Trp Gln Val Met Arg Leu Met Gln Leu Thr Gly Val Asp  
 100 105 110

Ala Phe Leu Lys Val Arg Ala Thr Val Glu Glu Ala Ala Thr Ala  
 115 120 125

&lt;210&gt; 31

&lt;211&gt; 82

&lt;212&gt; PRT

&lt;213&gt; Streptomyces parvulus Tü4055

&lt;400&gt; 31

Met Ser Met Ile Leu Pro Ala Glu Lys Glu Leu Arg Ala Val Leu Ala  
 1 5 10 15

Arg Phe Ala Gln Ala Arg Ile Asp His Asp Val Arg Pro Ser Gly Cys  
 20 25 30

Thr Ser Arg Leu Leu Glu Asp Ala Thr Tyr Thr Leu Cys Val Met Thr  
 35 40 45

Gly Ala Arg Thr Ala Glu Gln Ala Leu Arg Thr Ala Asp Glu Leu Leu  
 50 55 60

Ala Gln Phe Ala Glu Arg Thr Ala Ala Pro Val Glu Asp Glu Ala Leu  
 65 70 75 80

Ala Ala

&lt;210&gt; 32

&lt;211&gt; 70

&lt;212&gt; PRT

&lt;213&gt; Streptomyces parvulus Tü4055

&lt;400&gt; 32

Met Ser Asp Thr Arg Leu Arg Gln Arg Asp Glu Thr Ser Lys Gly Pro  
 1 5 10 15

Ala Thr Glu Ile Pro Ala Pro Gln Trp Arg Asp Leu Phe Leu Ala Pro  
 20 25 30

Asp Trp Gly Gly Thr Asp Glu Gln Val Ile Val Ala Glu Glu Ala Arg  
 35 40 45

Gly Pro Glu His Phe Thr Gly Ala Arg Arg Pro Arg Gly Gly Arg Arg  
 50 55 60

Ser Ser Arg Arg Ala Ala  
 65 70

<210> 33  
 <211> 172  
 <212> PRT  
 <213> Streptomyces parvulus Tü4055

<400> 33  
 Met Arg Cys Ser His Arg Ala Gly Gly Val Gly Ala Arg Ala Trp Leu  
 1 5 10 15

Gly Gly Asn Val Ala Val Asp Met Gly Glu Thr Gly Leu Asp Gly Ser  
 20 25 30

Ser Thr Gln Arg Ala Pro Glu Gly Ala Asp Pro Arg Ala Ala Ser Val  
 35 40 45

Thr Tyr Arg Arg Glu Ala Leu Arg Ile Ala Asp Ala Arg His Phe Ala  
 50 55 60

Thr Asp Tyr Leu Thr Arg Ser Gln Arg Asp Leu Arg Ser Pro Val Pro  
 65 70 75 80

Glu Arg Ala Ser Glu Ala Val His Leu Val Val Ser Glu Leu Ile Thr  
 85 90 95

Asn Ala Val Lys Tyr Gly Ala Asp Pro Ile Glu Leu Thr Leu Ser Leu  
 100 105 110

Thr Asp Asp Ala Val Thr Val Thr Val Arg Asp Gly Asp Thr Thr Leu  
 115 120 125

Pro Ala Pro Arg Pro Ala Asp Pro Ala Arg Val Gly Gln His Gly Leu  
 130 135 140

Glu Ile Val Ala Ala Leu Ser Gln Ala Val Glu Ile Arg Pro Glu Pro  
 145 150 155 160

Ser Gly Lys Arg Ile Thr Ala Arg Ile Ala Leu Thr  
 165 170

<210> 34a  
 <211> 105  
 <212> PRT  
 <213> Streptomyces parvulus Tü4055

<400> 34a  
 Met Gln Ser Ser Ser Ala Ser Val Arg Gly Glu Ile Val Ile Arg Arg  
 1 5 10 15

Ala Val Ala Arg Asp Ala Lys Arg Leu Ser Arg Leu Val Arg Gly Ser  
 20 25 30

Arg Ala Tyr Glu Gly Pro Tyr Ala Ala Met Val Ser Asp Tyr Arg Val  
 35 40 45

Gly Pro Asp Tyr Ile Glu Asn His Gln Val Phe Val Ala Ser Thr Pro  
 50 55 60

Arg Thr Pro Arg Thr Gly Cys Ser Ala Ser Thr Arg Cys Ser Ser Arg

103



260										265					270									
Ala	Arg	Leu	Ile	Val	Gln	Ala	Ala	Arg	Arg	Pro	Gly	Ile	Ser	Leu	Val									
275										280					285									
His	Arg	Glu	Leu	Leu	Asp	Phe	Ala	Gly	Asp	Glu	Phe	Tyr	Leu	Ile	Ser									
290										295					300									
Glu	Pro	Ala	Leu	Thr	Gly	Arg	Pro	Phe	Gly	Glu	Val	Leu	Leu	Ser	Tyr									
305										310					315					320				
Ser	Thr	Thr	Ser	Val	Val	Gly	Leu	Met	Arg	Gly	Cys	Thr	Pro	Leu	Leu									
325										330					335									
Asn	Pro	Pro	Pro	Thr	Thr	Pro	Val	Ala	Pro	Asp	Asp	Leu	Leu	Val	Val									
340										345					350									
Ile	Thr	Gly	Asp	Asp	Asp	Thr	Ala	Arg	Leu	Asp	Asp	Cys	Ala	Glu	Ser									
355										360					365									
Val	Glu	Lys	Ala	Ala	Val	Ala	Ser	Arg	Pro	Pro	Thr	Pro	Ala	Pro	Ala									
370										375					380									
Glu	Arg	Ile	Leu	Leu	Leu	Gly	Trp	Asn	Arg	Arg	Ala	Pro	Leu	Val	Val									
385										390					395					400				
Asp	Gln	Leu	His	Arg	Arg	Ala	Arg	Pro	Gly	Ser	Ala	Val	Asp	Val	Val									
405										410					415									
Ala	Glu	Pro	Gly	Glu	Ala	Thr	Ile	Arg	Glu	Ile	Ser	Glu	Ala	Glu	Ala									
420										425					430									
Asp	Ser	Gly	Asn	Gly	Glu	Asn	Gly	Gly	Asn	Gly	Leu	Ser	Leu	Ala	Leu									
435										440					445									
His	His	Gly	Asp	Ile	Thr	Arg	Pro	Glu	Thr	Leu	Arg	Arg	Leu	Asp	Val									
450										455					460									
His	Ser	Tyr	Asp	Ser	Val	Ile	Val	Leu	Gly	Arg	Asp	Pro	Ala	Pro	Gly									
465										470					475					480				
Gln	Pro	Pro	Asp	Asp	Pro	Asp	Asn	Arg	Thr	Leu	Val	Thr	Leu	Leu	Leu									
485										490					495									
Leu	Arg	Gln	Leu	Glu	Glu	Ala	Thr	Gly	Arg	Glu	Leu	Pro	Val	Val	Thr									
500										505					510									
Glu	Leu	Ile	Asp	Asp	Arg	Asn	Arg	Ala	Leu	Ala	Pro	Ile	Gly	Pro	Gly									
515										520					525									
Ala	Asp	Val	Ile	Ile	Ser	Gly	Lys	Leu	Ile	Gly	Leu	Leu	Met	Ser	Gln									
530										535					540									
Ile	Ser	Gln	Asn	Arg	His	Leu	Ala	Ala	Val	Phe	Glu	Glu	Leu	Phe	Ser									
545										550					555					560				
Ala	Glu	Gly	Ala	Gly	Val	Arg	Leu	Arg	Pro	Ala	Thr	Asp	Tyr	Leu	Leu									
565										570					575									
Pro	Gly	Ser	Thr	Thr	Ser	Phe	Ala	Thr	Val	Val	Ala	Ala	Ala	Arg	Arg									
580										585					590									
Arg	Gly	Glu	Cys	Ala	Ile	Gly	Tyr	Arg	Asp	His	Ala	Asp	Ala	Ser	Thr									
595										600					605									

Arg Pro His Tyr Gly Val Arg Ile Asn Pro Pro Lys Arg Glu Arg Arg  
 610 615 620

Arg Trp Thr Ala Glu Asp Glu Val Val Val Ile Gly Thr Asp  
 625 630 635

<210> 36

<211> 165

<212> PRT

<213> Streptomyces parvulus Tü4055

<400> 36

Met Pro Ser Thr Asp Val Val Glu Leu Ile Leu Arg Asp His Arg Arg  
 1 5 10 15

Met Glu Glu Leu Phe Arg Thr Leu Arg Asn Val Glu Ala Asp Arg Ala  
 20 25 30

Ala Ala Leu Thr Glu Phe Ala Asp Leu Leu Ile Ala His Ala Ser Ala  
 35 40 45

Glu Glu Asp Glu Val Tyr Pro Ala Leu Arg Arg Tyr Lys Asn Val Glu  
 50 55 60

Gly Glu Asp Val Asp His Ser Val His Glu His His Glu Ala Asn Glu  
 65 70 75 80

Ala Leu Leu Ala Leu Leu Glu Val Glu Asp Thr Ala Ser Asp Glu Trp  
 85 90 95

Asp Asp Lys Leu Glu Glu Leu Val Thr Ala Val Asn His His Ala Asp  
 100 105 110

Glu Glu Glu Arg Thr Leu Leu Asn Asp Ala Arg Glu Asn Val Ala Asp  
 115 120 125

Asp Arg Arg Arg Glu Leu Gly Gln Lys Phe Gln Glu Ala Arg Ser Arg  
 130 135 140

Tyr Leu Glu Thr Gly Cys Gly Ser Val Glu Asn Val Arg Lys Leu Val  
 145 150 155 160

Ala Ala Ala Asp Asp  
 165

<210> 37

<211> 787

<212> PRT

<213> Streptomyces parvulus Tü4055

<400> 37

Met Ala Arg Arg Leu Thr Glu Gly Arg Thr Arg Arg Glu Lys Gly Glu  
 1 5 10 15

His Met Gln Lys Pro His Gly Glu Glu Ser Glu Thr Ser Leu Ser Val  
 20 25 30

Thr Pro Pro Lys Lys Trp Ala Ala Gly Val Pro Ala Val Val His Ala  
 35 40 45

Leu Glu Tyr Ser Leu Glu Gln Thr Ser Pro Arg Arg Thr Gly Val Asp  
 50 55 60

Leu Leu Thr Met Asn Gln Val Gly Gly Ile Asp Cys Pro Gly Cys Ala  
 65 70 75 80  
 Trp Ala Asp Pro Ala Pro Gly Arg Arg His Arg Asn Glu Tyr Cys Glu  
 85 90 95  
 Asn Gly Ala Lys His Ile Asn Asp Glu Ala Thr Thr Arg Arg Val Thr  
 100 105 110  
 Ala Asp Phe Phe Arg Glu His Ser Val Ala Asp Leu Ala Gly Arg Ser  
 115 120 125  
 Asp Met Trp Leu Asn Gln Gln Gly Arg Leu Thr Glu Pro Met Ile Lys  
 130 135 140  
 Arg Pro Gly Ser Ala His Tyr Glu Pro Ile Gly Trp Asn Asp Ala Leu  
 145 150 155 160  
 Gly Val Leu Ala Glu Glu Leu Lys Ser Leu Ala Ser Pro Asp Glu Ala  
 165 170 175  
 Val Phe Tyr Thr Ser Gly Arg Ala Ser Asn Glu Ala Ala Phe Val Leu  
 180 185 190  
 Gln Leu Phe Ala Arg Ala Phe Gly Thr Asn Asn Leu Pro Asp Cys Ser  
 195 200 205  
 Asn Met Cys His Glu Ser Ser Gly Phe Ala Leu Ser Glu Thr Leu Gly  
 210 215 220  
 Thr Gly Lys Gly Thr Val Gly Leu Asp Asp Leu His His Ala Asp Leu  
 225 230 235 240  
 Ile Phe Leu Val Gly Gln Asn Pro Gly Ser Asn His Pro Arg Gln Leu  
 245 250 255  
 Ser Ala Leu Glu Glu Ala Lys Arg Asn Gly Ala Arg Ile Val Ala Val  
 260 265 270  
 Asn Pro Leu Pro Glu Ala Gly Leu Arg Arg Phe Lys Asn Pro Gln Gln  
 275 280 285  
 Pro Arg Gly Val Val Gly Arg Gly Thr Arg Ile Ala Asp Arg Phe Leu  
 290 295 300  
 His Ile Lys Pro Gly Gly Asp Leu Ala Leu Phe Gln Ala Leu Asn Arg  
 305 310 315 320  
 Leu Leu Leu Glu Ala Glu Asp Ala Arg Pro Gly Thr Val Leu Asp His  
 325 330 335  
 Asp Phe Ile Asp Ala His Thr Thr Gly Phe Glu Glu Phe Ala Arg His  
 340 345 350  
 Ala Arg Thr Val Asp Trp Asp Asp Val Arg Ala Ala Thr Gly Leu Thr  
 355 360 365  
 Arg Glu Glu Ile Glu Lys Val Arg Asp Glu Val Leu Asp Ser Glu Arg  
 370 375 380  
 Val Val Val Cys Trp Ala Met Gly Ile Thr Gln His Lys His Gly Val  
 385 390 395 400  
 Pro Thr Val Arg Glu Ile Val Asn Phe Leu Met Leu Arg Gly Asn Leu

405

410

415

Gly Arg Ala Gly Thr Gly Ala Cys Pro Val Arg Gly His Ser Asn Val  
 420 425 430

Gln Gly Asp Arg Thr Met Gly Ile Trp Glu Gln Met Pro Asp Thr Phe  
 435 440 445

Leu Asp Ala Leu Arg Asp Glu Phe Gly Phe Glu Pro Pro Arg Ala His  
 450 455 460

Gly Leu Asp Ser Val Asn Ser Ile Lys Ala Met Arg Glu Gly Arg Val  
 465 470 475 480

Lys Val Phe Leu Ala Leu Ala Gly Asn Phe Val Arg Ala Ala Pro Asp  
 485 490 495

Ser Glu Val Thr Glu Glu Ala Met Arg Ser Cys Arg Leu Thr Ala His  
 500 505 510

Ile Ser Thr Lys Leu Asn Arg Ser His Thr Val Cys Gly Asp Thr Ala  
 515 520 525

Leu Ile Leu Pro Thr Leu Gly Arg Thr Glu Arg Asp Val Gln Ala Asp  
 530 535 540

Gly Glu Gln Phe Val Thr Val Glu Asn Ser Met Ser Glu Val His Thr  
 545 550 555 560

Ser Arg Gly Arg Leu Ala Pro Ala Ser Pro Met Leu Leu Ser Glu Ile  
 565 570 575

Ala Ile Leu Cys Arg Leu Ala Arg Leu Thr Leu Asp Gly Arg Val Glu  
 580 585 590

Ile Pro Trp Glu Thr Phe Glu Gly Asp Tyr His Thr Ile Arg Asp Arg  
 595 600 605

Ile Ala Arg Ile Val Pro Gly Phe His Asp Phe Asn Ala Arg Val Thr  
 610 615 620

Arg Pro Gly Gly Phe Gln Leu Pro Asn Pro Val Asn Glu Gly Val Phe  
 625 630 635 640

Asn Thr Glu Val Gly Lys Ala Leu Phe Thr Arg Asn Glu Ser Val Val  
 645 650 655

Pro Arg Ala Pro Glu Gly His Leu Leu Leu Gln Thr Leu Arg Ser His  
 660 665 670

Asp Gln Trp Asn Thr Val Pro Tyr Thr Asp Asn Asp Arg Tyr Arg Gly  
 675 680 685

Ile His Gly Ser Arg His Val Val Leu Val Asn Pro Ala Asp Leu Ser  
 690 695 700

Glu Leu Gly Leu Ala Gln Gly Asp Arg Val Asp Leu Val Ser Val Trp  
 705 710 715 720

Ala Asp Gly Thr Glu Arg Arg Ala Glu Asn Phe Gln Val Val Pro Tyr  
 725 730 735

Pro Ala Ala Lys Gly Ser Ala Ala Ala Tyr Tyr Pro Glu Thr Asn Val  
 740 745 750

Leu Val Pro Leu Asp Ser Val Ala Asp Ile Ser Asn Gln Pro Thr Ser  
 755 760 765

Lys Gly Ile Val Val Arg Leu Glu Pro Val Pro Asp Arg Thr Gln Pro  
 770 775 780

Ser Pro Ala  
 785

<210> 38  
 <211> 206  
 <212> PRT  
 <213> Streptomyces parvulus Tü4055

<400> 38  
 Met Ala Glu Gln His Glu Gly Pro Arg Ala Val Pro Asp Thr Pro Gly  
 1 5 10 15

Ala Arg Thr Ser Gly Asp Arg Ser Thr Gly Arg Arg Pro Leu Arg Glu  
 20 25 30

Arg His Val Asp Gln Thr Val Glu Val Ala Val Pro Val Arg Thr Ala  
 35 40 45

Tyr Asn Gln Trp Thr Gln Phe Lys Ser Phe Pro Arg Phe Ser Ala Val  
 50 55 60

Val Arg Asp Val Glu Gln Val Arg Pro Thr Val Thr Ala Trp Thr Leu  
 65 70 75 80

Gly Tyr Gly Pro Leu Arg Arg Arg Phe Ala Val Glu Ile Leu Glu Gln  
 85 90 95

Asp Pro Asp Ala Tyr Leu Ala Trp Arg Gly Leu Glu Gln Arg Pro Trp  
 100 105 110

His Arg Gly Glu Val Glu Phe Arg Pro Thr Glu Ser Gly Gly Thr Ala  
 115 120 125

Ile Thr Val Arg Val Leu Leu Glu Pro Arg Gly Ala Ala Arg Ile Leu  
 130 135 140

Thr Arg Ser Ser Arg Ala Val Arg Leu Thr Thr Arg Leu Val His Gly  
 145 150 155 160

Glu Leu Thr Arg Phe Lys Arg Phe Met Glu Gly Leu Gly Gln Glu Gly  
 165 170 175

Gly Ala Trp Arg Gly Thr Ile Arg Asn Gly Arg Val Gln His Asp Arg  
 180 185 190

Pro Glu Pro Pro Arg Ser Arg Val Ala Arg Trp Pro Val Gly  
 195 200 205

<210> 39  
 <211> 251  
 <212> PRT  
 <213> Streptomyces parvulus Tü4055

<400> 39  
 Met Leu Leu Leu Ile Ser Pro Asp Gly Val Glu Glu Ala Leu Asp Cys  
 1 5 10 15

Ala Lys Ala Ala Glu His Leu Asp Ile Val Asp Val Lys Lys Pro Asp  
 20 25 30

Glu Gly Ser Leu Gly Ala Asn Phe Pro Trp Val Ile Arg Glu Ile Arg  
 35 40 45

Asp Ala Val Pro Ala Asp Lys Pro Val Ser Ala Thr Val Gly Asp Val  
 50 55 60

Pro Tyr Lys Pro Gly Thr Val Ala Gln Ala Ala Leu Gly Ala Val Val  
 65 70 75 80

Ser Gly Ala Thr Tyr Ile Lys Val Gly Leu Tyr Gly Cys Thr Thr Pro  
 85 90 95

Glu Gln Gly Ile Ala Val Met Arg Ala Val Val Arg Ala Val Lys Asp  
 100 105 110

His Arg Pro Glu Ala Leu Val Val Ala Ser Gly Tyr Ala Asp Ala His  
 115 120 125

Arg Ile Gly Cys Val Asn Pro Leu Ala Leu Pro Asp Ile Ala Ala Arg  
 130 135 140

Ser Gly Ala Asp Ala Ala Met Leu Asp Thr Ala Val Lys Asp Gly Thr  
 145 150 155 160

Arg Leu Phe Asp His Val Pro Pro Asp Thr Cys Ala Glu Phe Val Arg  
 165 170 175

Arg Ala His Ala Ala Gly Leu Leu Ala Ala Leu Ala Gly Ser Val Arg  
 180 185 190

Gln Thr Asp Leu Gly Arg Leu Thr Arg Ile Gly Thr Asp Ile Val Gly  
 195 200 205

Val Arg Gly Ala Val Cys Glu Gly Gly Asp Arg Asn Ala Gly Arg Ile  
 210 215 220

Arg Pro His Leu Val Ala Ala Phe Arg Ser Glu Met Asp Arg His Ala  
 225 230 235 240

Arg Glu His Arg Ala Gly Val Thr Thr Ala Ser  
 245 250

&lt;210&gt; 40

&lt;211&gt; 467

&lt;212&gt; PRT

&lt;213&gt; Streptomyces parvulus Tü4055

&lt;400&gt; 40

Met Pro Thr Pro Ala Pro Asp His Ala Pro Ala Gln Arg Ala Ala Pro  
 1 5 10 15

Leu Ala Val Val Asp Pro Ala Thr Gly Thr Val Phe Asp Glu Ala Pro  
 20 25 30

Asp Gln Gly Pro Asp Val Leu Asp Ala Val Val Asp Arg Ala Arg Arg  
 35 40 45

Ala Trp His Gly Trp Arg Ala Asp Pro Asp Ala Arg Thr Thr Ala Leu  
 50 55 60

Arg Ser Ala Ala Asp Ala Val Glu Ala Ala Gly Asp Asp Leu Ala Arg



65	70	75	80
Leu Leu Thr Arg Glu Gln Gly Lys Pro Leu Ala Glu Ser His Ala Glu	85	90	95
Val Ala Arg Thr Ala Ala Arg Leu Arg Tyr Phe Ala Gly Leu Ala Pro	100	105	110
Arg Thr Arg Arg Ile Thr Asp Gly Arg Pro Val Arg Ser Glu Val Arg	115	120	125
Trp Arg Pro Leu Gly Pro Val Ala Ala Ile Val Pro Trp Asn Phe Pro	130	135	140
Leu Gln Leu Ala Ser Ala Lys Phe Ala Pro Ala Leu Ala Ala Gly Asn	145	150	160
Thr Met Val Leu Lys Pro Ser Pro Phe Thr Pro Leu Ala Thr Arg Leu	165	170	175
Leu Gly Ser Val Leu Ala Thr Ala Leu Pro Glu Asp Val Leu Thr Val	180	185	190
Val Thr Gly Arg Glu Pro Leu Gly Ala Arg Leu Ala Ala His Pro Gly	195	200	205
Ile Arg His Val Thr Phe Thr Gly Ser Val Pro Thr Gly Arg Ala Val	210	215	220
Ala Arg Ala Ala Ala Ala Ser Leu Ala Arg Val Thr Leu Glu Leu Gly	225	230	240
Gly Asn Asp Ala Ala Val Leu Leu Asp Asp Val Glu Val Asp Arg Ile	245	250	255
Ala Asp Arg Leu Phe Trp Ala Ala Phe Arg Asn Cys Gly Gln Val Cys	260	265	270
Met Ala Val Lys Arg Val Tyr Ala Pro Ala Arg Leu His Ala Gln Val	275	280	285
Val Glu Ala Leu Thr Glu Arg Ala Lys Ala Val Ala Val Gly Pro Gly	290	295	300
Leu Asp Pro Arg Thr Arg Leu Gly Pro Val Ala Asn Ala Pro Gln Leu	305	310	320
Ala Arg Val Glu Gln Ile Thr Arg Arg Ala Leu Ala Asp Gly Ala Arg	325	330	335
Ala Ala Ala Gly Gly His Arg Leu Asp Gly Pro Gly Cys Phe Phe Ala	340	345	350
Pro Thr Ile Leu Thr Asp Val Pro Pro Asp Ser Pro Val Val Thr Glu	355	360	365
Glu Gln Phe Gly Pro Val Leu Pro Val Leu Pro Tyr Arg Ser Leu Asp	370	375	380
Glu Ala Val Asp Ala Ala Asn Gly Thr Gly Phe Gly Leu Gly Gly Ser	385	390	400
Val Trp Gly Thr Asp Leu Asp Arg Ala Glu Ala Val Ala Asp Arg Leu	405	410	415

Glu Cys Gly Thr Ala Trp Val Asn His His Ala Glu Leu Ser Leu Ala  
 420 425 430

Gln Pro Phe Ala Gly Asp Lys Asp Ser Gly Val Gly Val Ala Gly Gly  
 435 440 445

Pro Trp Gly Leu Tyr Gly Asn Leu Arg Pro Phe Val Val His Arg Pro  
 450 455 460

Arg Gly Glu  
 465

<210> 41  
 <211> 368  
 <212> PRT  
 <213> Streptomyces parvulus Tü4055

<400> 41

Met Ser Phe Arg Ala Ala Val Leu Arg Gly Tyr Glu Asp Pro Phe Thr  
 1 5 10 15

Val Glu Glu Val Thr Leu Gly Thr Glu Pro Gly Ala Gly Glu Ile Leu  
 20 25 30

Val Glu Ile Ala Gly Cys Gly Met Cys Arg Thr Asp Leu Ala Val Arg  
 35 40 45

Arg Ser Ala Gly Arg Ser Pro Leu Pro Ala Val Leu Gly His Glu Gly  
 50 55 60

Ser Gly Val Val Val Arg Thr Gly Gly Gly Pro Asp Thr Ala Ile Gly  
 65 70 75 80

Val Gly Asp His Val Val Leu Ser Phe Asp Ser Cys Gly His Cys Arg  
 85 90 95

Asn Cys Arg Ala Ala Ala Pro Ala Tyr Cys Asp Ser Phe Ala Ser Leu  
 100 105 110

Asn Leu Phe Gly Gly Arg Ala Glu Asp Pro Pro Arg Leu Thr Asp Gly  
 115 120 125

Ser Gly Ala Ala Leu Ala Pro Arg Trp Phe Gly Gln Ser Ala Phe Ala  
 130 135 140

Glu Tyr Ala Leu Val Ser Ala Arg Asn Ala Val Arg Val Asp Pro Ala  
 145 150 155 160

Leu Pro Val Glu Leu Leu Gly Pro Leu Gly Cys Gly Phe Leu Thr Gly  
 165 170 175

Ala Gly Ala Val Leu Asn Thr Phe Ala Ala Gly Pro Gly Asp Thr Leu  
 180 185 190

Val Val Leu Gly Ala Gly Ala Val Gly Leu Ala Ala Val Met Ala Ala  
 195 200 205

Thr Ala Ala Gly Ala Pro Ser Val Ala Val Asp Arg Asn Pro Arg Arg  
 210 215 220

Leu Glu Leu Ala Glu Arg Phe Gly Ala Val Pro Leu Pro Ala Ala Thr  
 225 230 235 240

Ala Gly Leu Ala Glu Arg Ile Arg Arg Leu Thr Asp Gly Gly Ala Arg  
 245 250 255

Tyr Ala Leu Asp Thr Thr Ala Ser Val Pro Leu Ile Asn Glu Ala Leu  
 260 265 270

Arg Ala Leu Arg Pro Thr Gly Ala Leu Gly Leu Val Ala Arg Leu His  
 275 280 285

Thr Ala Leu Pro Leu Glu Pro Gly Thr Leu Asp Arg Gly Arg Ser Ile  
 290 295 300

Arg His Val Cys Glu Gly Asp Ala Val Pro Gly Leu Leu Ile Pro Gln  
 305 310 315 320

Leu Thr Arg Leu Trp Gln Ala Gly Arg Phe Pro Phe Asp Gln Leu Val  
 325 330 335

Arg Thr Tyr Pro Leu Ala Asp Ile Asn Glu Ala Glu Arg Asp Cys Asp  
 340 345 350

Ala Gly Leu Val Val Lys Pro Val Leu Leu Pro Pro Ala Arg Ser Arg  
 355 360 365

<210> 42  
 <211> 301  
 <212> PRT  
 <213> Streptomyces parvulus Tü4055

<400> 42

Met Thr Gly Thr Ala Pro Gln Tyr Thr Asp Val Glu Gly Val Asn Gly  
 1 5 10 15

Gly Val Gly Leu Thr Ala Phe Leu Val Ala Ala Ala Arg Ala Ile Glu  
 20 25 30

Thr His Arg Asp Asp Ser Leu Ala Gln Asp Val Tyr Ala Glu His Phe  
 35 40 45

Val Arg Ala Ala Pro Ala Cys Ala Asp Trp Pro Val Arg Ile Glu Gln  
 50 55 60

Val Pro Asp Gly Asp Gly Asn Pro Leu Trp Gly Arg Phe Ala Arg Tyr  
 65 70 75 80

Phe Gly Leu Arg Thr Arg Ala Leu Asp Asp Phe Leu Leu Arg Ser Val  
 85 90 95

Arg Thr Gly Pro Arg Gln Val Val Leu Leu Gly Ala Gly Leu Asp Thr  
 100 105 110

Arg Ala Phe Arg Leu Asp Trp Pro Ser Gln Cys Ala Val Phe Glu Ile  
 115 120 125

Asp Arg Thr Gly Val Leu Ala Phe Lys Gln Gln Val Leu Thr Asp Leu  
 130 135 140

Ala Ala Thr Pro Arg Val Glu Arg Val Pro Val Pro Val Asp Leu Arg  
 145 150 155 160

Ala Asp Trp Ala Gly Ala Leu Thr Ala Ala Gly Phe Asp Pro Ala Ala  
 165 170 175

Pro Ser Val Trp Leu Ala Glu Gly Leu Leu Phe Tyr Leu Pro Gly Pro

113

<210> 44  
<211> 33  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: oligo CM410

<400> 44  
aaaatgcatt cggcctgaac ggccccgctg tca 33

<210> 45  
<211> 33  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: oligo CM411

<400> 45  
aaatggccag cgaacaccaa caccacacca cca 33

<210> 46  
<211> 32  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: oligo CM412

<400> 46  
aaagtcctag gcggcgggccg gcgggtcgac ct 32

<210> 47  
<211> 35  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: oligo CM413

<400> 47  
tttagatctc gcgacgtcgc acgcgccgaa cgtca 35

<210> 48  
<211> 34  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: oligo CM414

<400> 48  
aaactgcaga gtcgaacatc ggtcacacgc aggc 34

<210> 49  
<211> 35  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: oligo CM415

<400> 49

aaaatgcatg atccacatcg atacgacgcg cccga

35

<210> 50

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo CM416

<400> 50

taaatgcatt ccattcggtg caggtggagt tgatcc

36

<210> 51

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo CM417

<400> 51

ataggatccc ctccgggtgc tccagaccgg ccaccc

36

<210> 52

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo CM368

<400> 52

tttcctgcag gccatcccca cgatcgcgat cggct

35

<210> 53

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo CM369

<400> 53

tttcatatga caggcagtg tggttcggcc ccatt

35

<210> 54

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo CM370

<400> 54

tttcatatgg cggatgccgt acgtgccgcc ggcgct

36

<210> 55

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo CM371



<400> 55  
tttcatatgc cccaggcgat cgtccgcacc ac 32

<210> 56  
<211> 41  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: oligo CM372

<400> 56  
tttcatatgg tctcggcccc ccacacaaga gccctccggg c 41

<210> 57  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: oligo B1819A

<400> 57  
gtcatgcatg cggcgggctc 20

<210> 58  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: oligo B1819B

<400> 58  
ggtctagaac ggccgaactt 20

<210> 59  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: oligo B1819C

<400> 59  
gttctagaac ctcgggtcggc 20

<210> 60  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: oligo B1819D

<400> 60  
ctggatccca cgctgctgcg 20

<210> 61  
<211> 19  
<212> DNA  
<213> Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: oligo BLDA

&lt;400&gt; 61

ggagacttac gggggatgc

19

&lt;210&gt; 62

&lt;211&gt; 19

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: oligo BLDB

&lt;400&gt; 62

ctccagcagc gaccagaac

19

&lt;210&gt; 63

&lt;211&gt; 20

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: oligo B19A

&lt;400&gt; 63

cccatgcatc accgacatac

20

&lt;210&gt; 64

&lt;211&gt; 20

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: oligo B19B

&lt;400&gt; 64

gcgatatccc gaagaacgcg

20

&lt;210&gt; 65

&lt;211&gt; 20

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: oligo B1920A

&lt;400&gt; 65

gccaaagcttc ctcgacgcgc

20

&lt;210&gt; 66

&lt;211&gt; 20

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: oligo B1920B

&lt;400&gt; 66

cactagtgcc tcaccagtt

20

&lt;210&gt; 67

&lt;211&gt; 20

&lt;212&gt; DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo B1920C

<400> 67

cactagtgac ggccgaagcg

20

<210> 68

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo B1920D

<400> 68

tcggatccgt cagaccgttc

20

<210> 69

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo CM384

<400> 69

aacctgcagg taccocggtg gggtagcggtc gcccgga

36

<210> 70

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo CM385

<400> 70

cgccgcacgc gtcgaagcca acga

24

<210> 71

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo CM386

<400> 71

tgtgggctgg tcgttggtt cgac

24

<210> 72

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo CM387

<400> 72

ggtagcctgca gcgtgagttc ctgcacggat ccga

34

<210> 73

<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo CM388

<400> 73

gaggaactca ccctgcaggc accgct

26

<210> 74

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo CM395

<400> 74

cgaacgtcca gccctcgggc atgcgt

26

<210> 75

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo CM396

<400> 75

tggcagcat gcccgagggc tggacgtt

28

<210> 76

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo CM397

<400> 76

tttcctgcag gccatgccga cgatcgcgac aggct

35

<210> 77

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo CM398

<400> 77

aaacatatgg tcctggcgct gcgcaacggg gaactg

36

<210> 78

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo CM399

<400> 78

tttcctgcag gcgatgccga cgatggcgat gggct

35

<210> 79

<211> 43

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo CM400

<400> 79

aaacctgcag gttccccggc gacgtggact cgccggagtc gtt

43

<210> 80

<211> 41

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo CM401

<400> 80

ttttctagag cgacgtcgca ggcggcgatg gtcacgcccg t

41

<210> 81

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo B25A

<400> 81

ttctgcagcc gcggccttcg

20

<210> 82

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo B25B

<400> 82

agaattcgcc ggcgccgctg

20

<210> 83

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo B7T1

<400> 83

ggctgcagac gcggctgaag

20

<210> 84

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo B7T2

<400> 84  
ccggatccca gagccacgtc 20

<210> 85  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: oligo BP4501

<400> 85  
cgtatgcatg gcgccatgga 20

<210> 86  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: oligo BP4502

<400> 86  
agccaattgg tgcactccag 20

<210> 87  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: oligo BNHT1

<400> 87  
gtcatgcatc agcgcacccg 20

<210> 88  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: oligo BNHT2

<400> 88  
gtgcaattgc cctggtagtc 20

<210> 89  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: oligo BTRNAS1

<400> 89  
tgtctagact cgcgccaaca 20

<210> 90  
<211> 20  
<212> DNA  
<213> Artificial Sequence



&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: oligo BTRNAS2

&lt;400&gt; 90

tgaattccga aggggggtggt

20

&lt;210&gt; 91

&lt;211&gt; 20

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: oligo B5B

&lt;400&gt; 91

aactagtccg cagtggaccg

20

&lt;210&gt; 92

&lt;211&gt; 20

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: oligo B5A

&lt;400&gt; 92

tcgatatcct caccgcccgt

20

&lt;210&gt; 93

&lt;211&gt; 20

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: oligo B6B

&lt;400&gt; 93

aactagtgtg gcagacggtc

20

&lt;210&gt; 94

&lt;211&gt; 20

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: oligo B5A

&lt;400&gt; 94

tcgatatcct caccgcccgt

20

&lt;210&gt; 95

&lt;211&gt; 20

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: oligo B6T1

&lt;400&gt; 95

cggatgcatc accggcacgg

20

&lt;210&gt; 96

&lt;211&gt; 20

&lt;212&gt; DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo B6T2

<400> 96

tgggatccgc ggggcggtac

20

<210> 97

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo BBB

<400> 97

aactagtgcg atcccgggga

20

<210> 98

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo BBA

<400> 98

cgtcgatatc ctccaggggc

20

<210> 99

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo BBT1

<400> 99

tactgcagca cacccggtgc

20

<210> 100

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: oligo BBT2

<400> 100

tgggatccgc tgtgtcatat

20

<210> 101

<211> 20

<212> DNA

<213> Artificial Sequence

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Leu Phe Val Gln Asp Gly Thr Gln Gly Arg Gly Ile Gly Arg Leu Leu  
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Val Asp His Met Lys Arg Arg Ala Arg Ala Ala Gly Leu Asp Arg Val  
35 40 45

Arg Val Val Ser His Pro Pro Ala Glu Gly Phe Tyr Arg Ala Val Gly  
50 55 60

Ala Leu Pro Thr Gly Thr Ala Arg Ala Asn Pro Pro Ala Val Ala Trp  
65 70 75 80

Asp Arg Pro Val Leu Glu Phe Leu Ile Pro  
85 90